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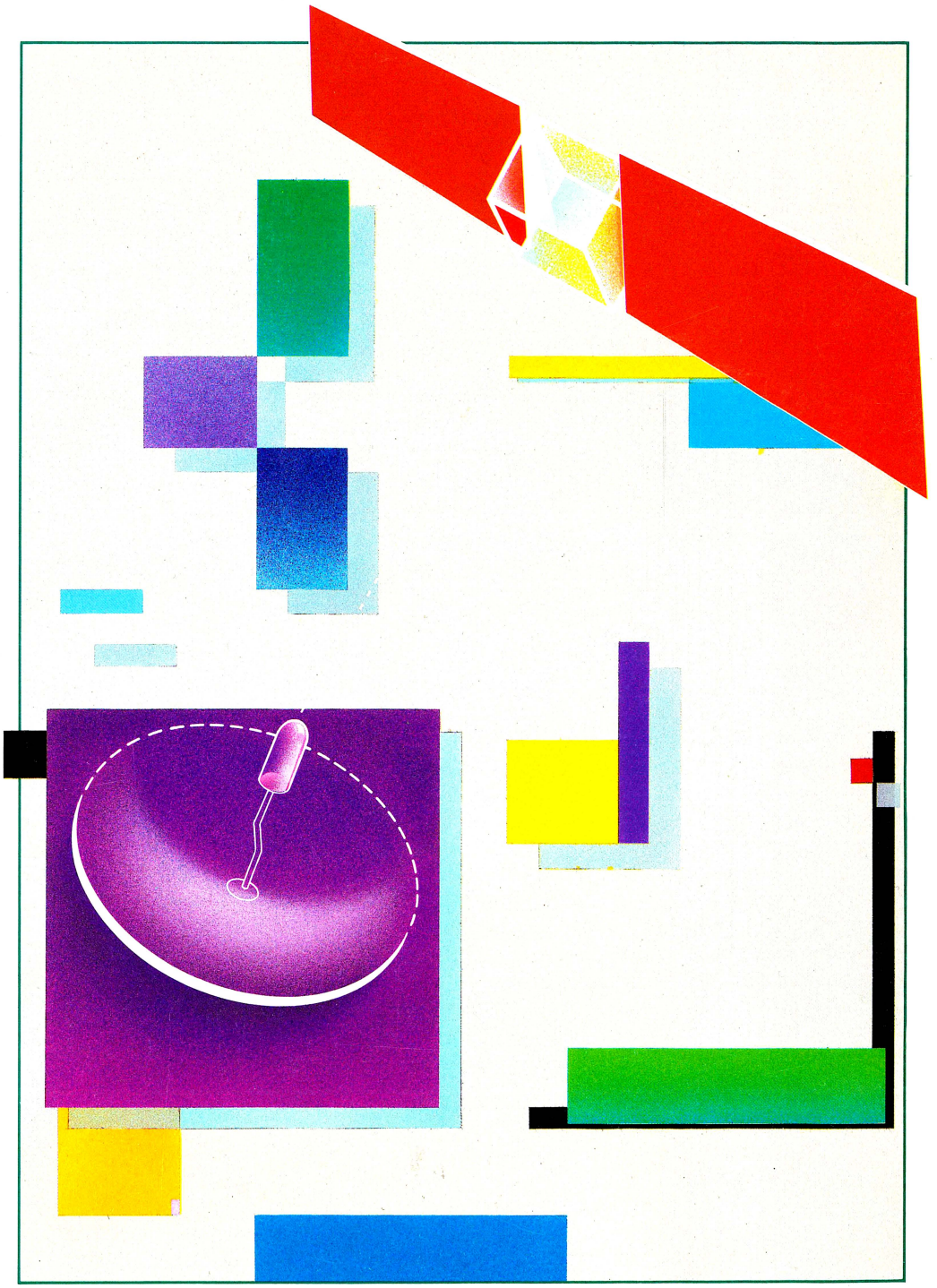
TechNotes

- New!! On-Line Services
- Telecom-munications Primer - Part 2
- Customized Report Forms
- Batch File Programming



TechNotes

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READ ME FIRST

by Laurie Miller

Our featured topic of the month is again Framework II telecommunications. Last month, Part One of Kent Irwin's "Telecommunications Primer" dealt with setting up your hardware and software in preparation for getting connected. In Part Two, Kent talks about how to work with Framework II's Telecomm frame while it's active on the desktop, and how to upload to and download from a remote information system. He includes some handy tips and tricks that you can apply during your own telecommunications sessions.

TechNotes Expands

Just introduced this month is a new ***TechNotes*** department, **On-Line Services.** Each month **On-Line Services** will provide you with excerpts from some of the most interesting and noteworthy messages posted on Ashton-Tate's Forum on CompuServe. These postings are generally technical in nature and are geared toward users of Ashton-Tate products. The information you find in the Ashton-Tate Forum may include sample algorithms, hardware and software configurations recommended by other users, or clarification of commands and functions. In general, it is an open forum for discussion of any topic related to using microcomputers. We are sure you will enjoy reading **On-Line Services.**

Two dBASE III articles in this issue deal with special reporting techniques. Beth Miranda's article, "Techniques for Customized REPORT FORMs in dBASE III," discusses design methods you can implement that expand the capabilities of the REPORT FORM for dBASE III users. Included is how to report on data taken from two or more related database files. The second article, "Sending Screens to the Printer in dBASE III PLUS," by Paul Bukauskas, presents a method for using the **Shift-PrtSc** capability of the operating system for sending screens to the printer using a function key.

An article of general interest is Mark Rice's "Batch Files—The Easiest Power User Tool." Mark Rice, a free-lance writer and friend of the Software Support Center, demonstrates techniques of batch file programming in a very practical discussion for applications developers working in the PC/MS-DOS environment.

MultiMate Technical Support: This month we include the MultiMate Pre-Call Checklist and new MultiMate hardware and software product information. The Pre-Call Checklist outlines information that you should have available before you call MultiMate Technical Support. MultiMate products reviewed this month include the Business Advantage Keyboard, the Business Advantage Communications Board, GraphLink, On-File, Just Write, and LAN Versions. This product information will familiarize you with what MultiMate products have to offer.

Publisher
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Roy Moore, Manager

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Laurie Miller

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Kent Irwin, Christopher White

Assistant Editor
Olivier Biggerstaff

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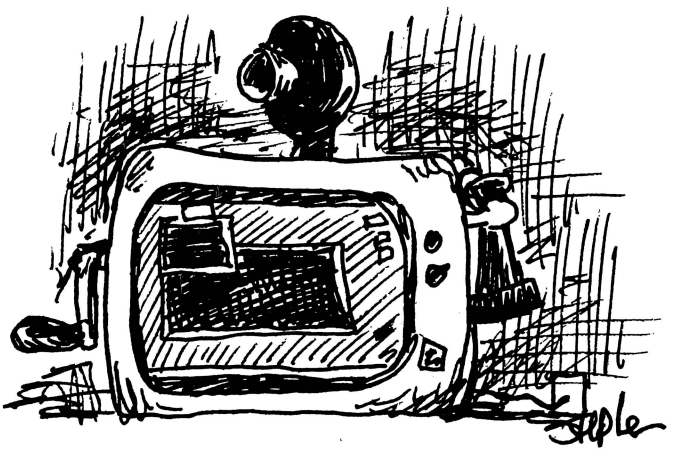
Telecommunications Primer—Part Two

by Kent Irwin

Last month we examined the steps necessary to set up the hardware and software of your telecommunications system. Being an adventurous Framework II user I'm sure you have since discovered some of the computers and electronic services that you can connect with using your newly configured system. Each of these services is different—not only in content, but also in the set of acceptable commands and the format those commands will take. Learning and using a specific service is up to you, and well beyond the scope of this article. However, there are several ways in which Framework II can help you manipulate the information you share with a remote system. This article focuses on how telecommunications relates to the rest of your desktop and how to upload and download information during a session.

Working with the Active Telecomm Frame

When Framework II connects to another computer system, it places you inside a word frame referred to as the Active Telecomm frame. This frame, usually created for you, is labelled "Telecommunications". You can begin a session inside a word frame that already exists on the desktop, but I recommend using an empty frame to keep things simple. If there is information in an active Telecomm frame that you want in one of your documents, you can always copy it later.



The active Telecomm frame is a window onto a remote computer system. In this frame you conduct a dialog with the remote system, receive characters over the phone line that appear in your frame as text, and send characters back over the line by typing at the keyboard. In all other ways, the active Telecomm frame is a word frame, and obeys all the rules of frames. In addition, you are free to navigate out of the frame and work on the desktop during a session. For example, if you are connected to an electronic mail service and wish to refer to a document sitting on your desktop, you can navigate to that document and **ZOOM (F9)** to examine the contents. When you are ready to return to the Telecomm session, simply navigate the cursor back into the active Telecomm frame. To make it easy for you to remember which frame is currently active, Framework II displays a prompt on the message line that says "Telecomm is Active" when the cursor is on or in the frame. Likewise, you can examine the contents of a disk while in a Telecomm session by pressing **Scroll-Lock** and opening a drive cabinet.

All the text you send to and receive from the remote system is captured into a word frame transcript of your dialog. This can be very convenient during the session when you want to see some part of the dialog that has scrolled off the screen. All the cursor keys work in the Active Telecomm frame as they do in a word frame, so to examine an earlier part of the dialog press **PgUp** until you see the information you want. Then press **Ctrl-End** to return to the end of the frame, where any text received in the meantime will have been appended.

The maximum number of characters you can capture in the Active Telecomm frame is limited in two ways. First, any word frame may hold up to 64,000 characters. Second, you can set your own limit using the **Max Desktop Capture** option in the Apps:Telecommunications:Text Transfer submenu. Most of the time you will want your session fully captured, so that you can go back later and review the dialog. Set the **Max Desktop Capture** option to 64,000 and most sessions will be captured in their entirety. If you find that you are short of desktop space and need to limit the size of the Active Telecomm frame, or if you don't care about capturing the session, then lower the **Max Desktop Capture** limit. Don't lower it below about 2000, though, or you will be bothered by actually seeing Framework II delete lines off the top of the frame as new ones are added. As a rule of thumb, keep **Max Desktop Capture** at a value that is at least as large as the number of characters that can be displayed on your screen at once (80 columns x 25 rows = 2000 characters).

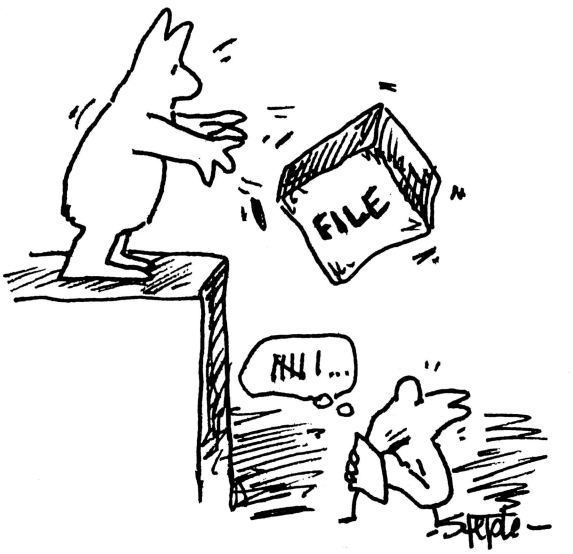
Downloading

The basis of telecommunications is a rapid exchange of data between two computer systems. The act of *receiving* a batch, or file, of data is called *downloading*, and the act of *sending* such a file is called *uploading*. In a strict sense, upload and download refer to all characters that are sent and received; however, the terms are commonly used to mean the transfer of prepared data files.

Framework II offers three techniques to download information from a remote system:

1. Text capture to the Active Telecomm frame on the desktop
2. Text capture to a text file on disk
3. File transfer by an error-checking protocol

The first technique, desktop capture, operates like a word frame on the desktop. If you issue a command to the remote system to read a file, such as a news article, your screen displays the text of the article and the Active Telecomm frame captures it. You don't need to do anything special to download text in this way.



To capture a session that is likely to have more than 64,000 characters, use the second technique. At the start of your session, press **Ctrl-PrtSc** to begin capturing to a file and Framework II will prompt you to enter the filename. From this point on, an exact transcript of your Telecomm session will be saved to that text file on disk. Another application of this technique would be to selectively capture portions of a session. For example, if you are in a session and suddenly decide that the next few screens of your dialog will be important enough to capture to a file, but you don't want the file to be cluttered by the commands sent to the remote system, you can turn the file capture mode on by toggling **Ctrl-PrtSc** just prior to receiving the block of information you want to capture. Then press **Ctrl-PrtSc** again to turn off capture mode and close the file at the end of the block. You can do this as many times as necessary, and text blocks from the Telecomm session will be appended automatically to the same text file.

Once you have specified a capture filename, that file will be used for all subsequent capturing. When you want to change to a different capture file, you must use the **Name for Capture File** option in the Apps:Telecommunications:Text Transfer submenu. Once a capture file has been named, it will always be the one opened by **Ctrl-PrtSc** until you change its name in the menu.

Some types of information, however, cannot be received as text. Binary data or programs such as .EXE or .COM files, or even .FW2 files cannot be represented by ASCII characters. Also, it is very important that the data for such files be free of error. Thus the third technique for downloading data, protocol transfer, is an error-free method that sends or receives any kind of file and checks its validity. Framework II supports several common protocols, of which the most widely used is XMODEM.

Let's suppose that you are connected to a bulletin board system that supports XMODEM transfers. You have located an interesting file on the system, named FOO.EXE, and are ready to download it. First, you give the necessary commands to the remote system to begin its XMODEM download process. Next, you give a similar command to Framework II by selecting **Receive a file** from the Apps:Telecommunications:File Transfer submenu (**Ctrl-A-T-F-R**). Type FOO.EXE into the menu and press **Return**. Your computer now tries to synchronize with the remote system and, if successful, begins receiving data. Since the transferred data is binary, it will not be displayed in the Telecomm frame. Instead, a period character appears in the frame for every 128 bytes of data received. After completing the transfer, Framework II prints the message "File Received" in the Active Telecomm frame.

To use one of the other file transfer protocols available in Framework II, change the selection in the Apps:Telecommunications:File Transfer submenu. When you issue the command **Receive a File**, it will use whatever protocol is specified in that menu.

Uploading

Sending data to a remote system is called *uploading*. For many telecommunications programs this means sending a file directly from the disk. In Framework II, however, uploading can mean sending anything from a phrase to a complete file. There are four basic ways to upload:

1. Type at the keyboard.
2. Use **COPY (F8)** or **MOVE (F7)** to send selected text from another frame.
3. Upload an entire frame with **Send as Text**.
4. Upload a file from disk using a protocol transfer.

The first three techniques represent the same essential concept, uploading text, but use different Framework II commands. Any one of them can be used when the remote system expects a response from you. A very common way to use text transfer commands is with electronic mail. For example, in your dialog with the mail service you can issue a command to begin composing, then type your text, treating the mail service like a word processing program. This may be acceptable for short messages, but composing a letter several pages long would be time-consuming and inefficient. Instead, use a word frame to compose your text in Framework II. At the time when the mail system expects you to input text, move the cursor out of the active Telecomm frame and into the word frame, then **EXTEND SELECT (F6)** to highlight the text, press **COPY (F8)**, move the cursor back into the Telecomm frame, and press **Return**. The copied text is sent to the mail system exactly as if you had typed it.

Another approach to the same electronic mail task involves the third uploading technique. When you are ready to send your text to the mail service, move the cursor onto the border of a word frame and select **Send as Text** with the key sequence **Ctrl-A-T-T-U-S**. This uploads the entire contents of the highlighted frame to the mail service. You'll find this technique especially useful when you have an outline on the desktop containing several separate documents to be uploaded. If you have written ten letters that will be sent to different people you can organize them in an outline frame, point to one of the frames in the outline, and upload it. The current view of the outline, as set by **VIEW (F10)**, will affect the exact text to be uploaded. If the frame is in outline view, the outline itself is uploaded; if the frame is in frames view, the contents of the selected frame is sent.

The final uploading technique transfers disk files to a remote system. It operates almost identically to the protocol download technique we discussed earlier. You begin by instructing the remote system to begin a protocol transfer (probably XMODEM). You could use **Ctrl-A-T-F-S**, the same we did for downloading, but you can also begin a transfer with Framework II's local commands. The **Ctrl-Ins** key activates local command mode. A number of useful local commands are available in this mode. Page 2-38 of *Advanced Topics* shows a complete list of these commands. They enable you to change disk directories, get a quick list of the files on a disk, change default drives, upload, download, and so on. Press **Ctrl-Ins** to bring up the Local Command prompt in your Telecomm frame, and type SEND FOO.EXE (assuming FOO.EXE is the name of the file you want to upload). As in downloading, a series of periods appear in the active Telecomm frame as the blocks of data are sent. At the end of the transfer Framework II will give the message "File Sent."

So far, in the two parts of this article, we have looked at the basic processes you will use in your early adventures on the phone lines. In time, you will surely need to automate and simplify sequences of commonly-used keystrokes, so the topic of next month's installment will be macros, both Telecomm macros and macros from the Library cabinet.

CORRIGENDA

There are two errors in the March 1986 issue of ***TechNotes*** in the article "Generating Menus in PC/MS-DOS," by Steve Goodman, one on page 30, and the other on page 33.

1. On page 30, it is stated that two-word DOS commands (which would require a space between the command and the parameter) can be separated by a colon instead of a space. For example:

   FOR %%F IN(CD\DBASE3\PLUS DBASE:ACCOUNTS CD) DO %%F

   This does not work except in the case of batch file labels, as in

   FOR %%F IN(CD\DBASE3\PLUS DBASE GOTO:REPEAT) DO %%F

   where REPEAT is a label in the current batch file.

2. On page 33, the CHOOSE.COM program contains an error. If you attempt to run the program as it is printed, graphic characters will display on the screen and the machine will hang. The code must contain a blank line between RET and E112. Change the first sentence after the CHOOSE.COM listing to read: "Remember to place a blank line terminated with a carriage return between the RET and the E112 instructions." Please make these changes before you run the program.

   We apologize for the error, and furiously beat our heads against Steve Goodman's for this one.

ON-LINE SERVICES

Do you have a modem? Do you subscribe to CompuServe, The Source, or Onepoint? If so, we have great news for you! Ashton-Tate offers technical support on all of these electronic information services. You can quickly access the kind of quality technical information that you have come to expect from ***TechNotes***, and you can do it through your computer system. To take advantage of this progressive new support method, you must subscribe to one of the services listed below. There are no additional charges for using our on-line support services, apart from the normal connect-time fees for each service. You can get specific subscription information by calling one of the following numbers:

Service	*Subscriber Information*	*Command to find Ashton-Tate*
CompuServe	(800) 848-8199	GO ASHTON
The Source	(800) 336-3366	ATSIG
Onepoint	(800) 222-2250	

To give you an idea of the fast-moving dynamic support that is happening on-line, ***TechNotes*** will be publishing regular excerpts from the Ashton-Tate Forum on CompuServe. This monthly material comes from messages our Forum users have posted on the bulletin board. To retain the original sense of this material, we have edited only for spelling, and all message headers have been removed to protect the identities of our users. The italicized text represents the replies that were posted to specific questions.

Framework II:

Cannot seem to use control keys to slow, stop, scroll, etc. without menus coming down. Ctrl-S doesn't slow the text and at times CompuServe seems to freeze on me. All these questions related specifically to use with CompuServe. Appreciate your help. Thanks.

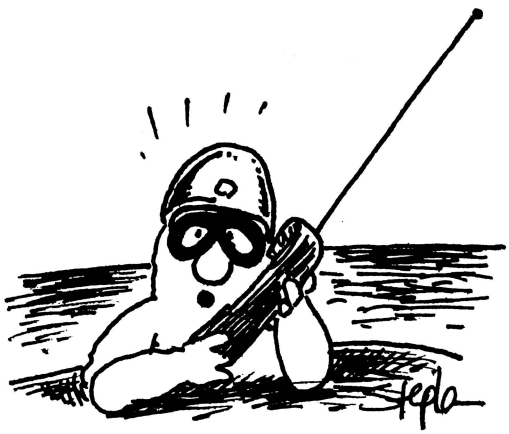
Framework II by default uses control characters as Framework commands. If you want to send characters like Ctrl-P and Ctrl-C to CompuServe (or any service), turn on the Send Ctrl Chars option in the Apps:Telecommunications: Setup:Setup Options menu.

I noticed a message the other day where you mentioned the Ignored Characters option in text transfer to help someone filter out unwanted noise characters. I do extensive work on a commercial time-sharing system that insists on sending idle or null characters from time to time. These timing characters show up on my screen as the "little house" figure (ASCII 127). My question is this: is there any way to filter out these characters in the active telecomm session? To say the least, they are annoying to look at!

In reality, all text you receive in the active Telecomm frame is being "downloaded." The Ignored Characters option in the Text Transfer:Download/Receive menu WILL filter any unwanted characters that are received from a remote sytem. To filter the ASCII 127 character from received text, select Ignored Characters, hold down the Alt key, type 127 on the numeric keypad, release the Alt key, then press Return.

Now that I think of it, I do not see those "house" characters on my PC/XT at home, but do see them on a client's AT. Perhaps the menu choice has not been properly selected on the AT version, I will certainly look into it more closely on Monday. Thanks for the prompt response. By the way, is there a name for the "house" (ASCII-127) character?

Actually, ASCII code 127 has an "official" name (according to the American Standard for Communication Information & Interchange, or whatever ASCII stands for) — its name is "DEL", and can be optionally called Delete or Rubout. The name RUBOUT comes from paper tape days. Since paper tape dealt with 7-bit character codes, a 127 code would consist of all 7 holes being punched through a given position on the paper tape. That way, if you made a typing mistake on your paper tape, you just typed RUBOUT on top of the bad characters and whoever read the tape knew to ignore rubouts!



I'm using the terminal emulation (IBM 3101) to get data from a mainframe. I have "Capture to File" on, filename is B:\ENGINES, and Max Desktop Capture is set at 64K. I can capture to file and desktop capture only if I hit Ctrl-PrtSc for each window of data. Is there any way to save this data to either the desktop or to the file without hitting Ctrl-PrtSc all the time?

No, there is no way to capture to file during emulation. You can do the "screen-shot", where Ctrl-PrtSc copies the current screen into the active Telecomm frame on the desktop, but standard file capture is only available when running tcom on the desktop. I suggest not using emulation when you want to capture a large amount of info.

What formula do I use to filter a database to show all occurrences of a substring of a field's contents? I want to be able to search for "Chev" from a record with "1986 Chevrolet". Please include a complete statement with the commas, ()s, etc. Thanks for your help.

The @scan function, used in the filter formula of a database frame, can select a substring from a field. Try this:

@scan("chev",fieldname) < > #N/A!

I have a few questions that I hope you will be able to answer for me. I love Framework II, but feel that with your help I will be able to benefit even more. I have the following equipment:

IBM AT, enhanced version w/512K RAM and 20 meg harddisk
DOS 3.1
IBM Enhanced Graphics Adapter with an extra 64K EGA memory (128K total graphics memory)
IBM Enhanced Color Display
Hewlett-Packard ThinkJet printer model: HP2225C

I was surprised to find that after using Setup to set for IBM Enhanced/color/text, there was very little in the way of color. The cyan on black is not bad, but I would like to know what foreground and background color combinations you recommend.

Secondly, when would I set up in Framework's "IBM Enhanced/color/graph" as opposed to "IBM Enhanced/color/text", i.e., why the two possible setups for my EGA? I do mostly word processing.

Do you have a guide that tells a Framework 1.x user what to read in the Framework II literature? There is so much material to cover. Is there some way to avoid the material I already know and get to that which covers just the new and modified features?

IBM's literature says that its EGA Adapter and Monitor support underlining on screen. I don't get underlining on screen but any text that I underline is shown in green.

Last, how do I get my ThinkJet to print in Compressed, Expanded, and Expanded-Compressed modes?

There are a number of screen drivers for the IBM EGA card. The Color Text driver you are using is really a "text" mode, and will not do dot graphics on the screen. In fact, that driver will show emphasized words in colors instead of the BOLD or ITALIC fonts. Also, on the color text driver you can only set the background color in Setup, the foreground color is fixed. If you use the color graphics driver, you can get full-resolution graphics on the screen, and you can set the foreground and background colors.

I recommend reading the new documentation: there are so many new features that you want to know about, and many of the old ones have changed slightly in Framework II.

Use the Print menu options for STARTING CONTROL CODES to send the proper setup codes to the ThinkJet for Expanded mode. Compressed can be set directly from the Format Options menu. If this doesn't seem to work, you may have to adjust the DIP switches on the ThinkJet. The ThinkJet has two modes of operation: HP contol codes, and Epson-compatible control codes. Make sure it is set for the HP mode.

Can anyone recommend a mouse for use with Framework II? Does anyone use a mouse? I want to get a mouse for use with a paint/draw program (I haven't decided on which one) and would like to use it with THE program FWII. Can anyone make any recommendations?

I use Mouse Systems' mouse with Framework II and am finding no problems. With Framework I, memory mapping limited my coming and goings and I found Framework kept writing over the mouse driver. No such problem with Framework II. The new memory management seems to like SOME resident memory. The three buttons give you a lot of flexibility. I currently use one button for Uplevel, one for Dnlevel, and the third as Return. Earlier I tried Instruct, Esc, and Return but found that not to be as useful.

I use a Mouse Systems mouse with version 4.0 of their pop-up menu software. Unfortunately, Framework II is not the "perfect" mouse program. However, I still find it useful and would still recommend it. The mouse driver software lets you customize how the mouse functions and comes with a driver for Framework. When I bought the mouse, it was packaged with PCPAINT a drawing program that looks a lot like MacPaint. Don't buy a mouse with only one button. Do buy one that has two or more (Mouse Systems has three buttons).

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dBASE II, dBASE III, and dBASE III PLUS:

Following up on my message to you about SET FILTER TO operating incorrectly when used with the SET RELATION TO command — I've tested it a bit and it seems that the command does *not* respect the FILTER status of the file which is being related INTO. Thus, records which are supposed to be filtered out are selected in the SET RELATION TO process. Has this anomaly been discussed previously, and more importantly, is it corrected in dBASE III PLUS?

The SET RELATION TO command takes precedence over the SET FILTER TO and SET DELETED ON commands. That is, information from a related database will be displayed if addressed with an ALIAS, even if that record has been filtered out with the SET FILTER TO command or with SET DELETED ON. The documentation does warn that deleted records will be accessed by any command specifically addressing that record, but SET RELATION TO is not mentioned in reference to this. The documentation for SET FILTER TO does not carry this caveat. This condition remains the same in dBASE III PLUS.

I would like to transfer all of my files from Perfect Filer to dBASE II and I have a Kaypro 10. I got a program to do so, However, is there any way to get the screen reorganized so that I can enter my data on about 40 fields on the same screen instead of one line at a time?

Aside from the fact that dBASE II will only allow you to have 32 fields per file (not 40), you could set up a .FMT file that contains the @..SAY..GET commands to lay out your screen in the proper order. Check the SET FORMAT command in your dBASE II manual for details.

I got a dBASE III PLUS Sampler from my dealer and I noticed some commands like LOGOUT and LOCK() didn't seem to work. Are these for use on a network, and do they work OK?

Yes, the commands and functions listed below work fine, but only apply to network installations, and do not come into play in either the Sampler or single-user dBASE III PLUS:

FLOCK()
LOGOUT
PROTECT
RETRY
RLOCK()
LOCK()
SET ENCRYPTION
SET EXCLUSIVE
UNLOCK

Also, the RLOCK() and LOCK() functions are designed to be used during the time that a change is being made to a record in the file.

I see that someone gave you the SEEK "&memvar" solution for accessing strings with leading blanks. If you'd like to have a workaround for the string convert problem, it is this: As you noticed, the STR() function right adjusts numeric data and fills with leading blanks. The way to force leading zeroes is to add a constant power of 10 that's larger than your base number. For example:

```
base_nber = 12345.67
alpha_nbr = SUBSTR(STR(base_nber + 1000000,10,2),2)
? alpha_nbr
  '012345.67'
```

You can now index on this number and do regular alpha searches.

NOTE TO ALL

In dBASE III 1.1, if the width of the STR() function was too small, you would get a string of asterisks until the entire number fit. In dBASE III PLUS, it will round the fractional part. In other words, in PLUS I can bring the width shown in the above example down to 7 and get a rounded result. In 1.1 the minimum is 10; no rounding applies.

Things your manual never told you #1: Data fields used in indexes should be multiples of four in length. As an alternative, re-do your indexes with the SPACE() function to bring the length of a field to a multiple of four. In the case of your 11-character field it would be FIELD + SPACE(1). In a grouping, INDEX ON FIELD1 + (FIELD2 + SPACE(1)) TO INDEX.

Is this still a problem in dBASE III PLUS, the multiple of four in indexes, I mean?

dBASE III PLUS corrects the index key length problem, and no longer requires the length to be a multiple of four bytes in length.

In Developer's Release or PLUS the TRANSFORM() function has proven handy for me in simple column reports that need PICTUREd fields. Instead of using REPORT FORM TO FILE filename I use SET ALTERNATE TO filename, open the alternate, and simply do a LIST FIELDS TRANSFORM(fieldname,picture), TRANSFORM(fieldname,picture) etc. I do not know what the line length limitation is but I think it's pretty big, and this way you get no headings, page breaks, or other extraneous garbage. Hope that helps.

The line length limitation is 254 characters, including spaces.

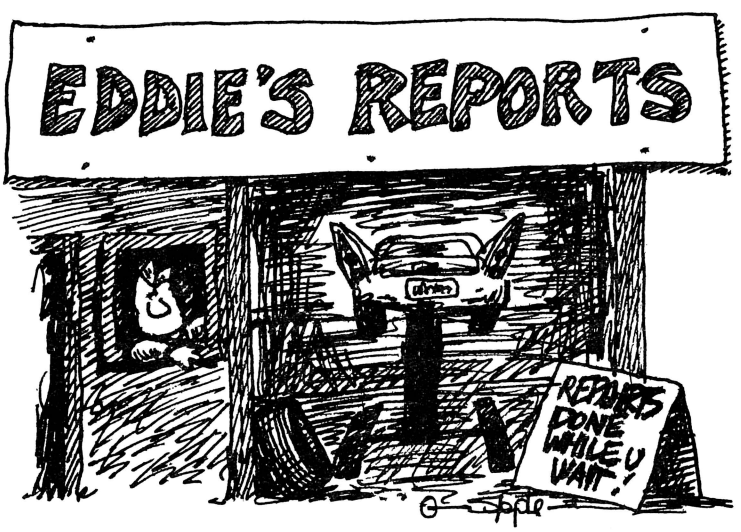
Techniques for Customized REPORT FORMs in dBASE III

by Beth Miranda

When you think of customized reports in dBASE III and dBASE III PLUS, you may see them as designed and programed, line-by-line and row-by-row. There are indeed limitations to what you can do with the REPORT FORM, but not all situations require you to program. Some techniques can be applied from within the REPORT FORM itself to create the kind of report you want.

The techniques that we will be discussing in this article include:

1. Creating reports with calculated fields
2. Formatting numeric and logical fields
3. Printing fields from the same record on multiple lines
4. Accessing fields from other database files



All the techniques involve adjusting the way you normally define the FIELD CONTENTS area in CREATE/MODIFY REPORT. Since many of these techniques can be actualized with some of the new and advanced features of dBASE III PLUS, there is a section devoted exclusively to dBASE III PLUS.

Calculated Field Contents

There are often situations where you want calculated fields in your REPORT FORM definition. It is very easy to create a calculated report field. Simply enter an expression that performs the calculation in the FIELD CONTENTS area instead of a database field. In addition to field names, the FIELD CONTENTS area accepts valid expressions of any data type. These expressions can be operations on numeric database fields in order to display a calculated value in your report. Instead of entering the field name, enter the calculation of the fields or memory variables as the FIELD CONTENTS expression.

For example, suppose you have an inventory database file that tracks stock items. Each item has a price, Item_price, and an on-hand quantity amount, On_hand. Assume that you want to print a report that involves a calculated value for each item's current stock. You check the database file and don't find any fields that include the calculated value. Since you probably won't ever need to report this special calculation ever again, you don't want to add this new calculated field to the database file structure. In this situation, creating a calculated report field in the REPORT FORM solves the problem. The first FIELD CONTENTS area contains the database field, Item_price, and the second, On_hand. Enter the calculated field, Item_total in the FIELD CONTENTS area as Item_price * On_hand.

Formatting Numeric and Logical Fields

To help solve the common problem of formatting numbers in a REPORT FORM, those of you with dBASE III Developer's Release and dBASE III PLUS have available two special functions, IIF() and TRANSFORM(). The IIF() function returns one of two defined values depending on the evaluation of an expression, either true or false. It is a one-line version of the IF..ELSE..ENDIF command structure. The TRANSFORM() function gives you the usage of the PICTURE clause of an @..SAY statement in any display command that accepts an expression for its output. You pass to it a numeric, date, or character expression and it returns a formatted character string.

The IIF() function is very useful as a formatting tool. The following is an example of this usage in REPORT FORM. Let us assume that you have a logical field in a personnel database file called "Is_male". It contains the value (.T.), if the applicant is a male or (.F.), if the applicant is female. In the REPORT FORM, you want to display the string "Male" for male applicants and "Female" for female applicants. The following expression demonstrates how to format this with the IIF() function. Place it, or one like it in the FIELD CONTENTS area of the respective report field.

```
IIF(Is_male,"Male","Female")
```

Since the standard CREATE/MODIFY REPORT field definition has no PICTURE capability to display, for example, numbers in a currency format ($99,999.99), we need another solution. The @..SAY command PICTURE clause allows for formatting numeric output in the way we want with this type of statement:

```
@ <row>,<col> SAY Number PICTURE "$99,999.99"
```

With the TRANSFORM() function, you can use any PICTURE function or template as a special formatting tool. This includes all PICTURE functions listed under the @ command in the ***dBASE III Reference Manual***. To define the same entry as the example above using TRANSFORM(), place the following expression in the FIELD CONTENTS area for the database field in question:

```
TRANSFORM(Number,"$99,999.99")
```

Remember that the TRANSFORM() function does not just format, it actually returns a value of a character type. And note that this data type conversion prevents you from totalling or subtotalling REPORT FORM fields that have been formatted with TRANSFORM(). The only workaround at this time is to write a custom report to get both statistical capability and the ability to format numbers.

Printing Information from the Same Record on Multiple Lines

The standard REPORT FORM format is a paginated list with a page heading, column headings, and detail lines displaying one record per line. Sometimes you might like a different format in which the information is printed in block style, such as a label or an invoice.

The basic technique is to create a REPORT FORM field that combines several database fields in a concatenated expression. There are two ways that dBASE III can wrap the contents of a report field within the defined report field column. First, if the contents definition of a report field is wider than the defined width and second, if there are embedded semicolons within the content definition string. For example, if you have database file that you want to print on successive lines, forcing wrapping at a particular place on each line, define the FIELD CONTENTS of your REPORT FORM field in the following way:

```
Author + ";" + Title
```

Forces the rest of the REPORT FORM field to the next print line.

The output of this expression appears like this:

```
R. Byers Everyman's Database Primer featuring dBASE III
```

The semicolon is placed within a set of quotation marks and between the fields where the line break is to occur. Since concatenation requires the expression to be character type, numeric fields must be converted to character with the STR() function before adding them to the printed string. You are limited to a total FIELD CONTENTS string length of no more than 254 characters. Note also that this technique will not work with memo fields since they cannot be treated as character fields and used with concatenation operators. To get blank lines between records, use the DOUBLE SPACE REPORT option on the first page of the REPORT FORM definition.

Reports from Related Databases

What happens if you want to print information from two or more database files from the same REPORT FORM? The following discussion demonstrates the technique to solve this common reporting problem. For example, suppose you have two database files related by a common key field, such as employee number. You want to define a report to use the employee's rate of pay from the first database file in order to calculate the total pay amount with the hours worked from the second database file. You can define the REPORT FORM so that fields from both database files are accessed without redefining the database file structure or JOINing them. This is done by establishing a relation between the two files with the SET RELATION command.

Not only can you relate one database file to another, but several database files can be linked together in a chain. The requirement for this option is that each database file must have at least one key in common with its related database file. The key can be a single field or an expression. To build the link between the related database files, use the SET RELATION command before defining and running your REPORT FORM. When a RELATION is SET and the record pointer is moved in the master database file, the pointer also moves in the related database file, to the next record with matching key information. For further information on the use this command, please refer to your ***dBASE III Reference Manual***.

With a relation, you must remember several important points. First, fields from related work areas must be referred to with the alias of the unselected work area in the format, <alias>-><field name>. In dBASE III PLUS, this is a little easier. You can define a list of fields from several work areas with SET FIELDS TO <field1,field2,...fieldN> and refer to any field in that list without specifying the alias.

Second, in order to define the REPORT FORM and refer fields from related work areas, all database files to be reported from must be in USE at the time the REPORT FORM is defined.

To establish a related REPORT FORM, SET the RELATION between all database files prior to the execution of the REPORT FORM. If the RELATION is not SET, the record pointer will not update in the subsidiary work areas and information from the related fields in those areas will be incorrect.

When you define a relational REPORT FORM, the database file currently selected and therefore the main database file being reported form, is very important. In a one-to-one relationship, report from the main database file area not from the lookup area. However, in a one-to-many relationship, the selected database file must be the "many" database file of the relation in order to establish the correct link. If you report from the USE the wrong database file when executing the report, only the first matching record of the detail database file will be found for each transaction record. Any subsequent matching records of the detail file will not be listed.

Using These Techniques with dBASE III PLUS

In dBASE III PLUS, all techniques outlined above will work in the same way. For relational reporting, the powerful VIEW and SET FIELDS command options add more ease of setup and use. There is also a substantial change in CREATEing and MODIFYing a REPORT FORM through the new menu-driven CREATE/MODIFY REPORT process which offers simpler setup and definitions.

The CREATE/MODIFY VIEW commands are used to save a database file environment that includes specific database and associated index files, format files, filters, and relations. It operates much like the SAVE TO does for memory variables. When you need that database environment, SET VIEW TO <view name> and the list of SELECT, USE, SET INDEX TO, and SET RELATION TO commands will be executed by dBASE III PLUS for you. If you are not so formal and have defined a structure of inter-related database files and reports as you go along, you can save the current database environment with CREATE VIEW FROM ENVIRONMENT. For relational reporting, SETting a VIEW is often a faster and simpler way to set up your file environment. For further information on Views, see "Understanding Views" in the March 1986 issue of ***TechNotes***.

The SET FIELDS command is used to limit the fields that can be accessed from the database files in USE, related or not. By defining a fields list with SET FIELDS, you no longer need to specify the alias when referring to fields any nonactive work areas. When you are defining the FIELD CONTENTS of a REPORT FORM field, access the selectable fields list by pressing the **F10** key. This is the list defined by SET FIELDS. If you haven't SET FIELDS, then the fields list consists of fields from the current work area only.

Conclusion

Along with the four techniques outlined, there are similar tricks and workarounds to complement other dBASE III commands and functions. Most of the additional techniques, just like the ones I have just described, have limitations and can only be used in certain application areas. You will find that some are listed in the product documentation, but many may not be. The programming and command language of dBASE III is flexible and workable tool. The best technique is to experiment and find the most productive path to the solutions for your application problems.

Batch Files—The Easiest Power User Tool

by Mark Rice

In his book, *PC-DOS: Introduction to High Performance Computing*, Peter Norton points out the three most common mistakes in operating microcomputers: inadequate backup, lack of attention to organization, and lack of sophistication when using batch files. While the first point is obvious, and the second and third are two aspects of the same problem, it is nonetheless reassuring to find someone who is as enthusiastic about batch files as I am.

At one time only batch processing was available. Old mainframes were so expensive and relatively underpowered that work had to be submitted and then executed in batches. Rather than typing each transaction in to the computer, the user created a punched card or a record of the transaction on tape. Sometime later, perhaps at the end of the day, these transactions would be processed through the computer in a group or batch.

As computing power has increased, so has the ability to provide real-time access to the central processor. Today, microcomputer users have total access to the central processor and the problem has now become one of harnessing the power to become more productive. Batch processing has reappeared as a method to gain control over the cacophony of new capabilities.

With batch processing the user can:

1. Eliminate unnecessary keystrokes.
2. Group commands together, providing a "job" orientation.
3. Navigate through the numerous directories on a hard disk to access particular programs or applications by linking batch files together with a menu to provide a front end for your applications systems.

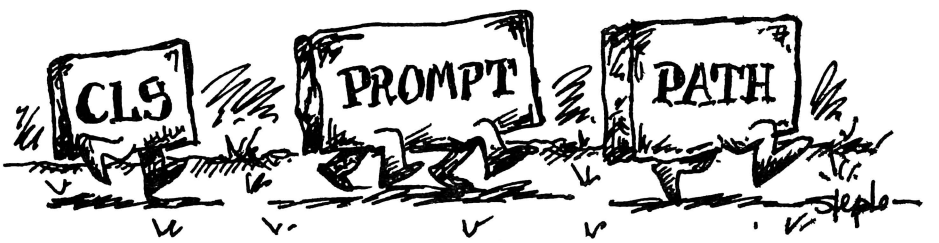
So what exactly is a batch file? A batch file is a text file that consists of DOS commands listed one after another. To designate a text file as a batch file to DOS, the text file must have a .BAT extension. To execute a batch file, enter its name at the DOS prompt followed by a **Return**. When executed, the batch file in turn executes each command as if it had been typed at the DOS prompt. Any command that can be typed at the DOS prompt, can be included in a batch file (DIR, CHKDSK, FW, DBASE, etc.).

Since a batch file is a standard DOS text file that ends with a **Ctrl-Z** character, you can use any text editor that writes ASCII text files to create one. In dBASE, you can use MODIFY COMMAND. In Framework II, you can use the Disk: Export: ASCII Text submenu. You can also create text files in DOS with EDLIN or COPY commands.

To make batch file processing more functional, PC/MS-DOS provides several commands that give you control over the execution of the batch files. Essentially, these commands constitute a small language. To some extent, this language is analogous to the command language in dBASE or FRED macros in Framework. You can group together commonly used commands into a file, add structural programming statements, and execute them as a unit. In the batch language, you are given the several abilities to control display to the screen, branch to a label, branch on a condition, and perform repetitive actions. With this set, you should be able to create batch files that control the majority of your DOS level functions. Consult your DOS manual under the Batch Commands section for more information. In addition, to look at some sophisticated examples of batch files, explore the (.BAT) files on your dBASE III PLUS or Framework II distribution disks. You will find some involved batch file programming techniques that you can learn from.

Putting Batch Files To Work

The best way to learn how to put batch files to work is to examine several examples. Ideally you will want to type these files into your text editor and begin using and modifying them to provide yourself with a custom system.



First, we will look at a batch file that eliminates unnecessary keystrokes and groups commands to facilitate a particular task or job. As an example, we will examine a typical AUTOEXEC.BAT, the batch file used to set up your computer at power up. When you turn on your computer and the operating system kernel is loaded, the computer searches for the batch file AUTOEXEC.BAT. If present, it is automatically executed, performing system configuration functions such as setting the date and time, the default path, and a user-defined DOS prompt. Below is a typical example of a user's AUTOEXEC.BAT file with a description of line's function.

Line	*Command Line*
1	PATH C:\;C:\DOS;C:\BAT;C:\DB;C:\LOTUS;C:\FWII
2	PROMPT = PG
3	AUTOTIME
4	DOSEDIT ALIAS

Line 1: Here we execute the PATH command to provide access to programs in directories other than the currently logged disk and directory. Note the drive specifier (C:) is included so that you can access files on other drives.

Line 2: The default DOS prompt is the letter of the current disk and a greater than sign (A>). You can, however, configure your own prompt with the DOS PROMPT command. Line two of the AUTOEXEC.BAT sets a standard user prompt that shows the path of the current directory and drive. For example,

C:\DBASE\APPS>

The PROMPT command has many options to display different types of system information such as date, time, current directory, in addition to literal strings. Consult your DOS reference manual under the PROMPT command for a complete list.

Line 3: Many memory cards and computers have an on-board battery powered clock/calendar which keeps the current date and time. Line 3 of AUTOEXEC.BAT executes a program that logs the DATE and TIME from the battery-powered clock/calendar. If you do not have an internal clock calendar, replace this command with the DATE and TIME commands that log each manually.

Line 4: This line executes a public domain program, DOSEDIT.COM or NDOSEDIT.COM that allows the editing and retrieval of commands typed at the DOS prompt. It operates in a very similar fashion to HISTORY in the Developer's Release of dBASE III and dBASE III PLUS.

The second example is a system of batch files that creates a front end to a hard disk. There are two major issues to creating such a system. First, you want allow the user to navigate a fairly complex system of application areas related to several major pieces of software such as dBASE III or Framework. Second, you want the user to have access to all necessary resources related to each application. Resources are divided into two categories; those directly related to the application itself, such as data files, and system level functions such as DOS utilities. This distinction is important. For example, you want the ability to run CHKDSK from anywhere on your hard disk since, basically, the condition of your disk is common to all application areas.

The basic architecture of a batch file system that satisfies the need to navigate easily and have access to essential resources is based on the ability of batch files to call one another. The key to linking these files into a system is the use of a menu that explains the names of the batch files being linked. You call a main control batch file that presents a list of other batch files to choose from. These choices are batch files that will navigate you to a specific application subdirectory and then either execute the application program or present you with a new set of choices. The new set of choices presented will navigate you further up the directory tree. If the batch file you choose executes an application program, the path is set so that files in other directories are accessible to the application program. After the application program has executed, the DOS default path is set and you are returned to the root directory where you began originally. In this system, you basically are operating out of the root directory, traversing the directory tree to application work areas.

To set this batch file system up, you need to first create a subdirectory in the root directory called BAT. The BAT subdirectory will hold all of the batch files and associated menu screen files that comprise the system. You then want to go into the BAT subdirectory and begin building the various levels of your system. Remember, for each menu, there are two files: the batch file and a text file that holds the screen image of the menu. The following batch file, MENU.BAT is the driver batch file for the system. The following explains its structure and the functions it performs. The format for this discussion is the same as for the AUTOEXEC.BAT example.

MENU.BAT

Line	*Command Line*
1	ECHO OFF
2	C:
3	CD \
4	TYPE C:\BAT\MENU.TXT
5	PROMPT = Enter correct letters>
6	ECHO ON

Line 1: This prevents the actual commands from being displayed on the screen. The results of a particular command may, however, be displayed.

Line 2: Log the default drive. In the example, it is the C: drive.

Line 3: Log the root directory.

Line 4: Use the TYPE command to display the contents of a text file that provides the user with the names of the available batch files. The contents of a sample text file, MENU.TXT, is below.

```
Type appropriate letters to enter correct area
FW          Framework
DB          dBASE III
WS          WordStar
NAMES       Address file
X           Exit
```

Line 5: Here you change the prompt to "Enter correct letters_" to encourage the user to make an appropriate response.

Line 6: Turn the echo back on so that the user can see the prompt.

Next we look at the batch files accessible from this menu. To access the program Framework II, you simply type FW. While this may not seem any different from what you would expect. The point is that, by using a batch file, you can change directories, provide access to program and data files, and reset the path.

FW.BAT

Line	*Command Line*
1	ECHO OFF
2	PATH C:\FWII;C:\DOS;C:\BAT;C:\DB
3	CD C:\FWII
4	FW
5	PATH C:\;C:\DOS;C:\FWII;\BAT
6	C:
7	CD \
8	PROMPT = PG
9	ECHO ON

Line 2: This sets a path to each of several subdirectories. Note that the most used subdirectory within the task at hand is given precedence, in this case, the FWII subdirectory.

Line 3: Change directory to get into dBASE.

No matter how your hard disk is physically organized, this system will allow you to define the most efficient work environment. It has major advantages over commercially available DOS organizers. First, the architecture is completely under your control. You can change your methods merely by editing a batch file. Second, it is not dependent on hardware or other software so you can use in any environment you like. This is an important consideration for network environments, where you need to define and optimize the organization of network applications. Third, you are always in DOS. If something goes wrong, you can easily get at system level resources for installations, setups, or tasks not pre-defined in your menu system.

This concludes this episode of batch file mania. For further information on the construction of batch files, read Stephen Goodman's article, "Generating Menus in PC/MS-DOS", in the March 1986 issue of ***TechNotes***.

Sending Screens to the Printer in dBASE III PLUS

by Paul Bukauskas

Taking control of the computer has been much easier with the introduction of assembly language interface in the Developer's Release. With this interface, you can LOAD and CALL often used low-level routines that perform functions that are slow, difficult, or impossible in dBASE III. One such function is the often used **Shift-PrtSc**.

This function is used in an application where the user might request a "snapshot" of the screen to the printer. Before the introduction of the assembly language interface, you would have to execute your routines with the RUN command. The problem with this approach is that it adds disk access overhead and perhaps more importantly, it is difficult to pass parameters to and from your routines. In the case of print screen capability, the user would have to press the **Shift-PrtSc** key, when you would rather your application program handle this task under its direct control.

By LOADing and CALLing a print screen routine, you can easily execute it without any delay, and once it is LOADed, it can be accessed again and again with the CALL command. The following routine Screen.BIN will execute a print screen by calling the DOS interrupt 5.

Coding the Program

The following is the set of steps required to assemble and create Screen.BIN from within DEBUG. First, load DEBUG.

```
A>DEBUG
```

Then give the "A" (assemble) command and begin entering the program.

```
-A100

501A:0100 INT 5
501A:0102 RETF
501A:0103
```

Next, place the number 3 in the CX register to tell DEBUG the number of bytes to write to disk.

```
-RCX
CX 0000
:3
```

Name the file using the "N" command, write the file to disk the "W" command, and quit using the "Q" command.

```
-NSCREEN.BIN
-W
Writing 0003 bytes
-Q
```

What Makes a Working Command File?

For a full explanation of (.COM) vs (.EXE) files and writing assembly language programs, see the September and October 1985 issues of ***TechNotes***.

Regardless of whether your routines are created in DEBUG or are assembled with ASM or MASM, they are executed from within dBASE in the same way. Up to five assembly language routines, each up to 32k, can be LOADed into memory. Each remains resident until it is released with the RELEASE MODULE <module name> command.

Executing the Program

To execute the print screen Screen.BIN file, it must first be loaded into memory with the LOAD command. For example,

```
LOAD Screen
```

Then, at some point in your command file, the screen can be printed by CALLing your screen dump routine as follows.

```
CALL Screen
```

The result is the screen printing out. Please note that some graphics cards treat video interrupts differently, and that INT 5 may print a page of memory that is no longer on the screen. This will happen if you have a Hercules graphics card installed.

Applications

How can this program be used most effectively? As an example, you can define a function key to CALL the Screen.BIN file:

```
SET FUNCTION 10 TO "CALL Screen;"
```

Each time the **F10** key is pressed, the screen will be printed. This assumes of course that Screen.BIN has first been LOADed and you are not in full-screen editing. If you are in any full-screen editing command such as APPEND, BROWSE, EDIT, or READ, the words "CALL Screen" will be inserted into the field you are editing. We'll talk about how to get around this in a moment.

An application that lists a database file can also use Screen. The following program, List.PRG uses the Tours.DBF found on the Sample Program and Utilities Disk to list records to the screen, prompting the user to either see another screen, print out the current screen, or quit.

```
* Program.: List.PRG
* Author..: Paul Bukauskas
* Date....: May 1, 1986
* Notes...: This command file will list a screen
* and prompt for screen dump to the printer.
*
```

```
SET BELL OFF
SET SCORE OFF
SET TALK OFF
USE Tours
LOAD Screen
more = .T.
choice = "C"
SET FIELDS TO Travelcode, Travelplan, Departure
DO WHILE more .AND. .NOT. EOF()
   CLEAR
   LIST NEXT 15
   @ 22,1 SAY "Q: Quit C: Continue P: Print screen "
   @ 22,42 SAY ": :"
   @ 22,43 GET choice PICTURE "@!"
   READ
   * ---The printer is assumed on and ready.
   DO CASE
   CASE choice = "Q"
      more = .F.
   CASE choice = "P"
      CALL Screen
   ENDCASE
ENDDO
RELEASE MODULE Screen
RETURN
* EOP List.PRG
```

As mentioned before, there are situations where you want to print a screen from within full-screen editing. However, it is quickly apparent that the contents of the function keys will be inserted on the screen, and not executed. For this reason, you cannot CALL a program with a function key unless the function key is assigned the ASCII value of a key that terminates full-screen editing. The key value can be picked from the READKEY() function. For example,

```
* ---Assign the F9 key to the value of the Ctrl-Home key.
SET FUNCTION 9 TO CHR(29)
EDIT
* ---Test for the F9 or Ctrl-Home key.
IF MOD(READKEY(),256) = 33
   CALL Screen
ENDIF
```

The other alternative is to have the user press the **Shift-PrtSc** key. Although you may have hoped to avoid this case under all circumstance, you may have an instance where it is unavoidable. Having stated the limitations, it is clear that the ability to LOAD and CALL a print screen program is a useful addition to your program library.

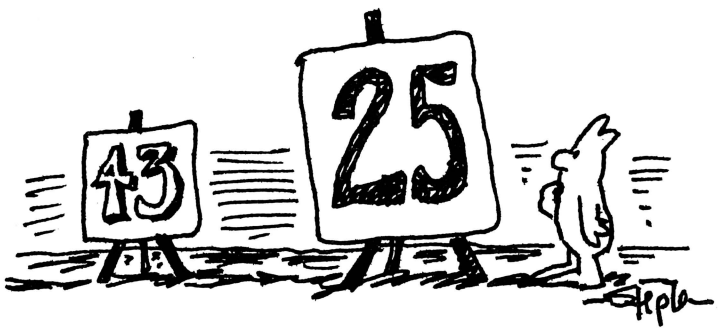
USAGE TIPS

dBASE III PLUS

by Christopher White and Joseph Perret

43-Line Mode Using the Enhanced Graphics Adapter

Users of dBASE III PLUS who have the IBM Enhanced Graphics Adapter and Display will notice that this hardware is supported but not documented. If you enter the full-screen configuration SET at the dot prompt and select the Color menu, you will notice that instead of "Color" or "Monochrome," "EColor25" and "EColor43" will be shown. You can toggle between the regular 25-line mode and the IBM Enhanced Graphic Adapter's special 43-line mode by pressing the **Return** key. Once in the 43-line mode, dBASE III uses all 43 lines of the screen in all display modes. This includes regular display commands such as LIST or DISPLAY, as well as full-screen commands such as APPEND, EDIT, BROWSE, @..SAY, @..GET. Unfortunately, no command in dBASE III PLUS can toggle modes, other than the full-screen SET command.



In order to take advantage of this undocumented feature, set the switch settings on the IBM Enhanced Graphic Adapter as follows:

	SWITCHES		
1	2	3	4
Off	On	On	Off

For more information on using the IBM Enhanced Graphic Adapter, consult the manual provided with the card.

@...SAY/GET

With SET SCOREBOARD ON, an @...SAY to line 0 in a format file will not write in the scoreboard area, but an @...GET will read from this area. This is consistent with previous versions of dBASE III. However, the larger size of the SCOREBOARD area in dBASE III PLUS increases the likelihood of conflict between SET SCOREBOARD ON and @...SAY...GET.

APPEND FROM

Beginning with the Developer's Release of dBASE III, APPEND FROM [DELIMITED] will import delimited files without delimiters. Formerly, delimited files without delimiters would be erroneously APPENDed into the current database file.

COPY STRUCTURE EXTENDED

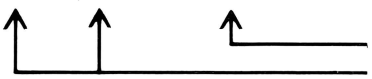
Sometimes you may want to make a copy of a database file structure without making an exact duplicate as you would with the COPY STRUCTURE command. As a typical situation, you might have database file that is usable, but you think has a corrupted header. You would like to COPY the database file with a new header and not have to recreate the structure by hand. With COPY STRUCTURE EXTENDED, this task can be accomplished quite easily. The following block of code shows just exactly how.

```
* ---Create new file.
USE <old file>
COPY STRUCTURE EXTENDED TO <extended file>
CLOSE DATABASE
CREATE <new file> FROM <extended file>
* ---COPY old file data to new file.
USE <new file>
APPEND FROM <old file>
CLOSE DATABASE
```

COPY TO [DELIMITED]

dBASE III PLUS and its predecessors, the Developer's Release, version 1.1, and version 1.0, do not allow you to COPY a DELIMITED file without delimiters and commas separating fields. Using the WITH BLANK option, you can get a text file without delimiters but you also get a text file without commas separating fields. A standard delimited file looks like this:

"field1","field2",12,.T.



Field separator.
Delimiter that bounds character fields.

If the external processor that you are interfacing only supports comma separated text files without delimiters, you can use the following command file to create one. The resulting text file will be in the following form:

```
field1,field2,12,.T.
```

To run this program, type the following command line in a command file or at the dot prompt:

```
DO Cpdelim WITH "<database filename>","<index filename>",;
                "<filter condition>","<output filename>"
```

The resulting file will have a (.TXT) extension.

```
* Program ...: Cpdelim.PRG
* Author ....: Christopher White
* Date ......: May 1, 1986
* Note(s) ...: Program to COPY to a DELIMITED file without delimiters.
*
PARAMETERS dbf, ndx, condition, txtfile
* ---Set environment.
```

```
SET TALK OFF
SET SAFETY OFF
* ---Open database file to copy and define the working set ofrecords.
filexp = dbf + IIF("" <> TRIM(ndx)," INDEX " + ndx,"")
USE &filexp
SET FILTER TO &condition
GO TOP
* ---Create a structure extended file.
COPY STRUCTURE EXTENDED TO Temp
SELECT B
USE Temp
* ---Find the last field that is not a memo field.
lastrec = RECCOUNT()
GO BOTTOM
DO WHILE Field_type = "M" .AND. (.NOT. BOF())
   lastrec = lastrec - 1
   SKIP -1
ENDDO
* ---Open output text file.
SET ALTERNATE TO &txtfile
SET ALTERNATE ON
* ---Output records.
SELECT A
DO WHILE .NOT. EOF()
   SELECT B
   GO TOP
   * ---Output fields.
   DO WHILE .NOT. EOF()
      fld_nme = TRIM("A->" + Field_name)
      DO CASE
      CASE field_type = "C"
         * ---Character field.
         ?? TRIM(&fld_nme)
      CASE field_type = "D"
         * ---Date field.
         ?? STR( YEAR(&fld_nme),4 ) +;
            RIGHT( STR(100 + MONTH(&fld_nme),3),2 ) +;
            RIGHT( STR(100 + DAY(&fld_nme),3),2 )
      CASE field_type = "N"
         * ---Numeric field.
         ?? LTRIM(STR(&fld_nme,Field_len,Field_dec))
      CASE field_type = "L"
         * ---Logical field.
         ?? &fld_nme
      ENDCASE
      * ---Insert field separator.
      ?? IIF(RECNO() = lastrec,"",",")
      SKIP
   ENDDO
   * ---Insert record separator.
   ?
   * ---Get next output record.
   SELECT A
   SKIP
ENDDO
* ---Clean up.
CLOSE ALTERNATE
CLOSE DATABASES
ERASE Temp.DBF
RETURN
* EOP Cpdelim.PRG
```

RESTORE

The ***dBASE III Reference Manual*** for all versions incorrectly states about the RESTORE command that any memory variables STOREd as PUBLIC remain PUBLIC if the ADDITIVE option is used. The ADDITIVE option to RESTORE will allow the user to RESTORE variables as PUBLIC only if they are declared PUBLIC before the RESTORE FROM <Filename> ADDITIVE command is issued. If the variables are not explicitly declared PUBLIC, they will be RESTOREd as PRIVATE variables, regardless of their status when STOREd and SAVEd. For example,

```
PUBLIC one, two
STORE 1 TO one, two
SAVE TO Mem
CLEAR ALL
RESTORE FROM Mem ADDITIVE          <— Variables are RESTOREd
                                      without being redeclared
                                      PUBLIC.
```

will create PRIVATE variables "one" and "two," while,

```
PUBLIC one, two
STORE 1 TO one, two
SAVE TO Mem
CLEAR ALL
PUBLIC one, two                    <— Variable is redeclared
RESTORE FROM Mem ADDITIVE             PUBLIC.
```

creates PUBLIC variables "one" and "two."

SET COLOR

The SET COLOR TO command changed somewhat in the Developer's Release and dBASE III PLUS. Formerly, colors could be referenced by number or letter code. With the Developer's Release and dBASE III PLUS, only letter codes are accepted. Additionally, there are several new options. Black can now be referenced with the letter code N, inverse video with the letter code I, and the screen can be blanked with the code X. The following table shows all the default color attributes for dBASE III from version 1.0 through dBASE III PLUS.

Color Attribute Table

	dBASE III		***Developer's Release dBASE III PLUS***
Color	***Letter***	***Number***	***Letter Only***
Black	<space>	0	N or <space>
Blue	B	1	B
Green	G	2	G
Cyan	BG	3	BG
Red	R	4	R
Magenta	BR	5	BR
Brown	GR	6	GR
White	W or RB	7	W or RB
Other			
Blank			X
Blinking	*		*
High intensity	+		+
Inverse video			I
Underline	U		U

Three other capabilities are added to color in dBASE III PLUS. First, there is a new function, ISCOLOR(), that returns a true value (.T.), if your monitor is in color mode. Second, SET COLOR supports a toggle syntax, ON/OFF, to toggle your monitor between color and monochrome modes, if your machine supports both. Lastly, a background option is added for machines that cannot set the background of individual characters with the standard and enhanced options.

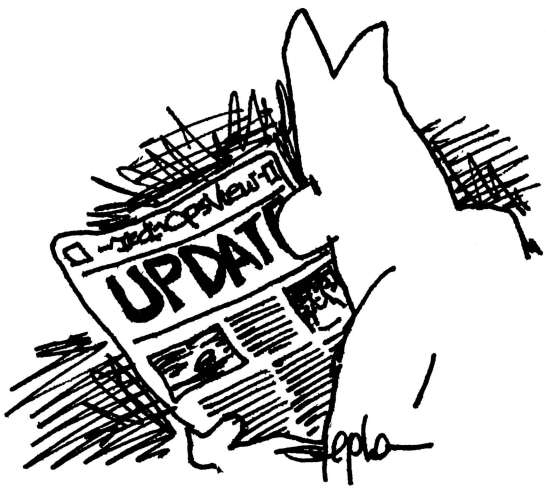
SET RELATION TO

In versions 1.0 and 1.1 of dBASE III, a relation could be released with the command SET RELATION. In the Developer's Release and dBASE III PLUS, this command returns a syntax error although it releases the RELATION. The proper and supported command syntax to release a relation is SET RELATION TO.

UPDATE

If you are trying to UPDATE one database file from another and the relation between them is many-to-one, you may have found that the UPDATE command does not support this formulation. The UPDATE command only updates the first instance in the target database file. This means that the UPDATE command is useful only when the relation between the source and the target database files is one-to-one. To update your many-instance file from the single-instance file, use the REPLACE command in combination with SET RELATION. For example,

```
SELECT 2
USE <source> INDEX <source index>
SELECT 1
USE <target> INDEX <target index>
SET RELATION TO <key> INTO <source>
REPLACE ALL <target field1> WITH <source>-><field1>,;
            <target field2> WITH <source>-><field2>,;
            <target field3> WITH <source>-><field3>
```



Framework II

by Chris Lo Vasco

Importing/Exporting Lotus 1-2-3 Release 2 Files

Files created with Lotus 1-2-3 Release 1A use a WKS extension; Release 2 files use a WK1 extension. Release 1A files can be imported and exported by using the commands in the Disk:Import or Disk:Export menus. Import or Export release 2 files to and from Framework II as follows:

Framework II to 1-2-3 Release 2
Use Framework's Disk Export utility to generate a 1-2-3 Release 1A file. This can be loaded directly into Release 2.

1-2-3 Release 2 to Framework II
Use 1-2-3's translate utility to translate to 1-2-3 Release 1A format. Framework II will be able to import this file format using the Disk:Import:Lotus 1-2-3 command.

Condensed Print with the Epson LQ1500

Condensed Print and Near Letter Quality modes on the Epson LQ1500 are mutually exclusive. You can use either mode individually, but if used together the Compressed mode will take precedence. This is normal operation for the LQ1500, and is not a part of the Framework II driver.

Protecting Empty Cells from Editing

Empty spreadsheet cells cannot be protected with the **Protect from Editing** command in the Edit pull-down menu. Framework II doesn't recognize the existence of a spreadsheet cell until the cell contains either a formula or text (numbers count as formulas). At the time you enter data into an empty cell, the "place holder" for the cell is replaced with the formula or text and it can be protected.

ANOMALIES

DEFINITION OF ANOMALY

We use the word "anomaly" to mean any one of the following:

- *INCORRECT COMMAND (or function) IMPLEMENTATION. A command or function does not execute as specified.*
- *INCOMPLETE COMMAND (or function) IMPLEMENTATION. A command or function does not execute as specified in every use of the command or function.*
- *DATA OR LOGICAL BOUNDARY LIMITATION. A command or function cannot perform an operation at a specified data or logical boundary.*

NOTE: Ashton-Tate reserves the right to withhold any further information that may reveal proprietary or trade secret information.

dBASE III PLUS

SET

If SET HELP is ON, and an error occurs with any SET command, responding "Yes" to the HELP prompt returns the HELP screen relevant to the full-screen SET command, not the specific command that caused the error.

SET COLOR TO

If SET STATUS is OFF and SET SCOREBOARD is ON, issuing the SET COLOR TO command from the dot prompt paints the SCOREBOARD area with the new color. Line 0 to the left of the SCOREBOARD area remains in the old color. Scrolling the screen will not paint the left half of line 0 with the new color. Issue a CLEAR, @ 0,0, SET STATUS, or SET SCOREBOARD command to paint that area of the screen with the chosen.

Framework II

@setformula

If you enter **Return** between the comma and the formula parameter of an **@setformula** function, the resultant formula will either show graphic characters or be hidden from view. An example of this is:

```
@setformula(Two,
@memavail)
```

The formula area of Two will either be hidden or display invalid data. If the formula is hidden from view, pressing **EDIT FORMULA (F2)** and **ZOOM (F9)** will display a blank screen. If you press **Ctrl-End**, the cursor will be at the last character position of the hidden formula. If you delete the first **Return**, the system will lock up, forcing a reboot; if you delete any other characters, the formula will reappear. In either case, the entire frame containing the resultant formula should be deleted and recreated.

@trace

The **@int** and the **@abs** functions may return incorrect values when executed with **@trace** ON.

For example, a spreadsheet labeled Stock contains the value 2.11 in cell A1 and 2.00 in cell A2. A word frame labeled Tron has the formula **@trace**(Tron,#ON). If the formula **@int**(a1*a2) is entered into Stock.C2 (or any other cell in Stock) and recalculated, the result is 0 instead of the correct answer, 4.

This will not happen when **@trace** is OFF.

Writing Telecomunication Setup Files

You can create a Telecomm setup file (.TCM extension) with a space embedded in the filename when using PC/MS-DOS 2.x with Framework II. However, doing so will result in an illegal filename that cannot be read by DOS or Framework II.

The following steps demonstrate this problem:

1. Select **Write Setup File** from the Apps:Telecommunications:Setup submenu.
2. Enter the filename "Bad One".
3. Open the disk cabinet to see filename "Bad.Tcm".
4. Issue the DIR command in PC/MS-DOS to show "Bad One.Tcm", which is an illegal filename.

This problem enables you to save more than one "Bad.Tcm" file (Bad_One.Tcm, Bad_Two.Tcm). Framework II will not allow you to delete such files and will halt with the error message "Unable to open file." The only way to delete these files is to use wildcards and the PC/MS-DOS DELETE or ERASE commands:

```
DEL B*.TCM
ERA BA*.TCM
```

With PC/MS-DOS versions 3.0 or 3.1 this problem does not occur. Instead, the filename in the disk cabinet will be "Bad One.Tcm" and Framework II will allow its deletion.

MULTIMATE TECHNICAL SUPPORT

As you may know, Ashton-Tate recently merged with MultiMate International, manufacturer of word-processing software and add-on products. Last month, ***TechNotes*** introduced technical support information on MultiMate products. This month we present MultiMate's Pre-Call Checklist as well as some new product information.

We hope you can make use of the MultiMate technical information found in ***TechNotes***. Please continue to contact MultiMate for technical support on MultiMate products and Ashton-Tate for dBASE and Framework.

Liz Burke, MultiMate Technical Support, contributed this information for ***TechNotes***. Some of the following material originally appeared in MultiMate's *On-Line* newsletter.

* * * *

PRE-CALL CHECKLIST

Please have the following information ready before you call the Multimate Technical Support Department, so that the technicians can help you more efficiently.

- MultiMate Serial Number
- Type of personal computer
- Amount of RAM memory in computer
- RAM disk drives in computer
- Amount of additional memory
- Number of floppy drives
- Type of internal hard disk
- Type of peripheral boards
- Type of printer (name and model number)
- Type of parallel interface
- Type of serial interface
- Other programs loaded into RAM with MultiMate (example: Sidekick, Topview, etc.)

For serial printers:

- Baud rate
- Data bits
- Stop bits
- Parity

MULTIMATE BOARDS

Multimate International has developed two new hardware products designed to enhance the capabilities and functioning of its professional word processing software packages.

The MultiMate Business Advantage Keyboard gives the user the feel of a dedicated word processor, increasing ease of use, and includes programmable keys for more power with MultiMate word processors and other professional software products. The MultiMate Business Advantage Communications Board brings users the long-desired capability of transferring information from one system to another with a networked environment.

Keyboard is IBM Replacement

The MultiMate Business Advantage Keyboard, manufactured by Cherry Electrical Products Corporation of Waukegan, IL, is designed as a replacement keyboard for use on IBM personal computers with MultiMate word processors and other software, such as Lotus 1-2-3. When used in conjunction with MultiMate word processors, the IBM's function keys are programmed to offer from two to four functions per key, extending the capabilities of the 83-key IBM PC keyboard.

In contrast, the MultiMate keyboard has 116 keys that simplify the task of locating individual commands. For example, the MultiMate commands, such as Copy, GoTo, and Indent, are each assigned to their own color-coded function keys. Sixteen user-programmable function keys are designed to be easily reassigned to represent up to 19 keystrokes. These keystrokes can be combinations of MultiMate commands or commands used by other software programs. Multiple sets of function key assignments can be created, saved, and loaded for use with other applications or software.

MultiMate's keyboard uses touch typists'preferred locations for the **Shift** and **Return** keys, eliminating the frequent errors caused by the IBM keyboard's nontraditional key locations.

The MultiMate keyboard also provides a clearly labeled programmable HELP key for instant access to the MultiMate word processor's context-sensitive help, with more than 100 screens of information. A Stop Print key gives instant control of documents during background printing. A separate cursor-control pad and a number pad with its own Enter key simplify numerical entries in MultiMate and enhance spreadsheet or statistical software programs.

Light-emitting diodes (LEDs) are included on the keyboard to indicate when the **Caps Lock** and **Num Lock** keys are engaged.

The keyboard can be used with the IBM PC or XT and requires 2K of memory.

Communications Board

Designed for use with IBM personal computers by FormScan Inc. of Melville, NY, the MultiMate Business Advantage Communications Board is a dual-function communications board. It works with MultiMate's WPS communications software to allow bisynchronous transfer of MultiMate documents between personal computers and WANG-dedicated word processors, such as the OIS, VS, and Alliance systems. The board also allows asynchronous communication with printers, modems, and other devices.

Communication from the PC to the WANG systems is accomplished by installing the communications board in the PC and connecting it to the WANG's communications port directly or through bisync modems and telephone lines. The MultiMate board and file conversion program handle file transfer between the two systems with error checking, taking into account WANG's modifications to the 2780 bisync protocol.

MultiMate's WPS communications software converts documents stored in WANG's WPS format to MultiMate's DOC format and vice versa. The WPS format is WANG Laboratories' document interchange format, designed to allow transfer of documents among the WANG family of dedicated word processors. The conversion process maintains almost 100-percent document integrity with no "clean-up" editing needed in most cases.

The board can be used with both the new MultiMate Advantage Professional Word Processor and with MultiMate Series 3.3. Advantage requires an IBM PC or compatible computer with two disk drives and 320K of memory. Series 3.3 has the same requirements, except that 256K of memory is sufficient.

NEW PRODUCTS

MultiMate International has expanded its product line with several new software products designed for the IBM PC family of microcomputers.

Among the new products are MultiMate GraphLink, a text and graphics integrator; MultiMate On-File, an information manager; Just Write, an entry-level word processor; and MultiMate for Local Area Networks (LANs).

MultiMate GraphLink

With the MultiMate GraphLink text and graphics integrator you can capture and print within an Advantage document any image produced by most graphics-generating software for the IBM PC. This can include signatures and freehand illustrations.

This package also includes these features:

- Memory-resident operation that keeps the program in the background of the applications program, so that it is always ready for use.
- Image sizing displayed on screen within MultiMate Advantage documents.
- Direct keyboard image enlargement, reduction, rotation, or borders.
- Support for multipass printing.
- Support for most graphics printers, including inkjet and laser printers. Images are printed in full color on color printers.
- Compatibility with mouse or digitizer pad to capture freehand drawings or signatures.
- Password protection for signatures.

System requirements for GraphLink are an IBM PC, XT, AT, or compatible computer, a graphics or laser printer, an IBM or compatible color/graphics board, DOS 2.0 or higher, and the MultiMate Advantage Professional Word Processor. GraphLink is a memory-resident program which uses 85K RAM in addition to the memory required for the applications software.

MultiMate On-File

MultiMate On-File, a list and information management package, combines the power of the microcomputer with the familiar concept of index cards. Information on the cards can be searched, selected, sorted, edited, viewed, printed, and cross-referenced.

Features included in On-File are:

- User-designed format for each record.
- Direct merge of list information created in On-File into documents created on MultiMate Professional Word Processors.
- Search by subject, index, card color, or date.
- Sort in ascending or descending order of up to three fields.
- Tickler/action date reminder.
- Individual card or groups of cards displayed on screen.
- Support of extended character sets for creating foreign words.
- Utility to create and maintain a list of MultiMate Document Summary screens.
- Conversion of MultiMate list documents to On-File cards.

System requirements for MultiMate On-File are DOS 2.0 or higher and an IBM PC, XT, AT or compatible computer with a minimum memory of 192K and at least one double-sided disk drive.

Just Write

Just Write, a new word processor from Multimate International, is designed for users with smaller capacity computers or simpler word processing needs. The program runs on IBM or compatible computers with a minimum memory of 128K. Just Write includes basic writing and editing functions, plus footnoting.

Among the many features supported are tabs, user-controlled page breaks, boldface printing, underlining, and adjustable pitch and line spacing. Just Write's document handling utilities allow users to copy, delete, move, or rename a document.

Just Write makes full use of the IBM keyboard's function keys. Most functions require only one or two keystrokes. Copying, moving, and deleting text is fast and easy with Just Write's highlighting function, which lets users scroll up or down and left or right with the cursor keys.

Just Write's automatic footnoting function consecutively numbers each footnote as text is being entered and then places the footnotes at the bottom of the corresponding pages when the document is printed.

The program also has a "phrase memory" that permits storage and recall of frequently used text for easy insertion into documents.

Just Write includes a number of safety features found in the original MultiMate that help retain information entered into the system. For example, the program saves the current page of text every time a user exits a page in the document, so that in case of a power failure, only the page currently being worked on is lost. Documents can also be saved without exiting the document, and an escape feature allows users to retract editing commands.

Some of the program's many print features include draft or final print, multiple copies, and automatic page numbering. Just Write supports several of the most popular printers.

Documentation includes a manual with training lessons and a reference section, a quick reference card listing all functions, and a color-coded keyboard layout chart. A 50,000-word spelling checker is available free of charge to registered users.

Just Write is compatible with the entire IBM PC line of computers, from the AT to the PCjr. It requires at least one double-sided disk drive, DOS 2.0 or higher for the PC, XT or AT, and DOS 2.1 for the PCjr.

LAN Versions

Local Area Network versions of the MultiMate Professional Word Processor 3.3 Series give users the versatility and power of MultiMate word processing, plus the ability to share resources and transfer information within a network. A separate LAN version has been designed for use with three of the most popular LAN systems: 3Com Ethernet, Novell Netware/86 (version 4.6 or higher), and IBM PC Network.

The LAN versions provide each user in a network with all the word processing and printing capabilities of the stand-alone version of MultiMate and, at the same time, permit standardization of office document handling, file sharing, and electronic data transfer between workstations.

Because files in a LAN can be stored in a centralized disk area, all users have rapid access to information. The LAN capability also allows MultiMate users to share common data files, including documents, libraries, and dictionaries. For example, a collection of phrases used in a company's correspondence can be stored in a common library that can be accessed by all users in a network.

Each workstation in a LAN can be connected to its own printer or can share one or more printers with the other workstations. A shared printer can be located nearby or away from the work area. Documents are sent to the shared printer where they are queued and printed in the order in which they were sent.

In addition to the memory requirements of the LAN software, MultiMate 3.3 Series LAN Version requires 256K.

LETTERS

Right-Justifying Character Fields in REPORT FORM

Dear ***TechNotes***:

I am using the REPORT FORM in dBASE III. In one report, I would like a right-justified character field, similar to numeric field displays. I can't find a way to do this. Is this possible?

J.H.

Dear J.H.:

As soon as you enter a field name in the field contents of the REPORT FORM, the column width defaults to the width of that field. We also know that the TRIM() function strips off trailing spaces. The trick is to move those trailing spaces to the beginning. This is accomplished as follows (assume that the width of that particular field is mlen):

```
SPACE(mlen - LEN(TRIM(Field))) + TRIM(Field)
```

Bold System Date in Framework II Header

Dear ***TechNotes***:

I am using Framework II to print a document. To print out a left-justified header, I use the **@hl** function. I have no trouble printing the header text in bold type. However, when I try to include the system date as a part of my header information, I cannot get the date to output in bold. Is this possible?

R.H.

Dear R.H.:

Assume that your document is named Test. First, create an empty word frame. Label it Bolddate and enter the following formula in the formula area:

```
@echo(#OFF),
@performkeys("{Ctrl-C}ENow{Return}
                        {F2}@date1(@today()){Return}
                        {Ctrl-W}BY
                        {Ctrl-L}GTest{Return}{Ctrl-P}B"),
@echo(#ON)
```

Next, COPY or MOVE Bolddate to the User-Defined Functions section of your Library cabinet. This way, it can be referenced from anywhere on the desktop.

Now, move your text frame to the formula area of Test and enter the following formula:

```
@Bolddate
@hl("YOUR HEADER GOES HERE        " & Now)
```

When you are ready to print Test, simply highlight the frame border and press **RECALC** (F5). The Bolddate formula will create an empty word frame. Label it Now, put the system date inside the frame, set the date to bold type, and then output to the printer. Note that you can select any of Framework II's **@date** formats. The formula in Test references the global variable Now and the entire header so that the text and the system date appear in bold type.

Redefining WANG PC Function Keys in dBASE II

Dear ***TechNotes***:

I am using dBASE II version 2.41 on a WANG PC. After I executed the INSTALL program and chose the WANG PC as my terminal, I entered dBASE. I noticed that the command LIST STATUS displays the definition of function keys 1 through 10. However, none of my function keys work. Can I install my function keys?

L.B.

Dear L.B.:

Ashton-Tate's install documentation discusses modifying the installation. Reenter the INSTALL program and press Ctrl-Y to display the Modify Previous Installation Menu. Use Function/Arrow Key Sequence, option 12, to install the function keys and/or the arrow keys. In addition, if you do not like the function key definitions, use option 13, Function Key Command Strings, to change them.

INDEXing ON a Date and a Time Field in dBASE III PLUS

Dear ***TechNotes***:

I am using dBASE III PLUS. One of my database files, Orders.DBF, has two fields, Date and Time. Date is a date field, and Time is a character field with a length of seven in the form HH:MMxx where HH is the hour, MM is the minutes, and xx is either AM or PM. Many orders come through the system all day, and all orders are logged in by Date and Time. To get a chronological listing of all our orders, I have indexed Orders using this key expression:

```
STR(YEAR(Date),4) + LEFT(DTOC(Date),5) + RIGHT(Time,2) +;
    LEFT(Time,5)
```

The Dates are in chronological order, and most of the Time fields are in order. The only problem is that 1:00 AM comes before 12:30 AM. I can see no way of changing this, unless I switch to a 24-hour clock. Can this be done?

B.M.

Dear B.M.:

dBASE III PLUS (and the Developer's Release) contains the MOD() function. The MOD() function returns the remainder of a division calculation. For example, the remainder of 5/3 is 2. The correct syntax for the MOD() function is:

```
MOD(x,y)
```

This results in the remainder of x divided by y. Using the above example:

```
? MOD(5,3)
```

returns 2.

Use 12 as the y parameter in the MOD() function. This will change 12:xx to 0:xx times which places them before 1:00. The correct syntax for an index key expression utilizing this idea is:

```
INDEX ON STR(YEAR(Date),4)+LEFT(CTOD(Date),5)+;
      RIGHT(Time,2)+STR(MOD(VAL(LEFT(Time,2)),12),2)+;
      SUBSTR(Time,4,2) TO Indxfile
```

* * * *

Direct your technical correspondence to Ashton-Tate Software Support, 20101 Hamilton Avenue, Torrance, CA 90502-1319. Be sure to include information on your hardware configuration when appropriate, such as the type of printer, the hardware, and the version of the operating system you are using.

Update Policies

dBASE II

The latest version of dBASE II, version 2.43*, is now available for update to all registered users of dBASE II, subject to format availability.

In order to update your current version of dBASE II, you must have your original software registration card on file with Ashton-Tate Customer Service. If you are not a registered user, you may request that a registration card be sent to you.

Prices for this update are outlined below, depending on which version of dBASE II you are currently using. (Funds must be in US dollars drawn on a US bank.)

Version 2.3
$75.00 within US — UPS shipping
$90.00 within US — DHL (3 day)
$100.00 in Canada - DHL (only)

Version 2.4
$50.00 within US — UPS shipping
$60.00 within US — DHL (3 day)
$75.00 in Canada — DHL (only)

Version 2.41 (purchased before 12/1/84)
$25.00 within US — UPS shipping
$35.00 within US — DHL (3 day)
$40.00 in Canada — DHL (only)

If your product was purchased after April 1, 1985, the 2.43* update is at no charge. Please include proof of purchase with requests for free updates. Direct all correspondence to:

Ashton-Tate Customer Service
dBASE II Update
20101 Hamilton Ave.
Torrance, CA 90502-1319
(213) 329-1664

dBASE III PLUS

Registered users of dBASE III version 1.0 or 1.1 will be notified by mail regarding the upgrade to dBASE III Plus. **Unregistered** users of dBASE III version 1.0 or 1.1 who wish to upgrade to dBASE III Plus are required to send in their registration card and contact: (213) 329-1664, or (213) 329-9989.

Framework II

Registered users of Framework version 1.0 or 1.1 will be notified by mail regarding the upgrade to Framework II. **Unregistered** users of Framework version 1.0 or 1.1 who wish to upgrade to Framework II are required to send in their registration card and contact: 1(800)437-4329.

Disk Replacement Policy

In the event that you find a defect in the programming, materials, or workmanship of an Ashton-Tate system disk within three months of purchase, we will replace it free of charge. Call Software Support first to verify the defect, (213) 329-0086, between the hours of 6:00 am and 4:30 PM, PST.

If you damage your system disk anytime within three years of purchase (and after the 90-day warranty), there is no need to call Software Support. Our Customer Service department will replace it for $20.00 (per disk), payable by check, money order, or VISA/MasterCard (U.S. funds drawn on U.S. bank). Just complete the replacement form below and send it to Customer Service at the address below, along with the defective disk and your payment. (Please enclose a dated proof-of-purchase.)

Ashton-Tate Customer Service
Disk Replacement Form
20101 Hamilton Ave.
Torrance, CA 90502-1319

PLEASE BE ADVISED: You **must** be **registered** with Ashton-Tate in order to receive a replacement disk. If you have lost your registration card, or feel that you may not be on file, please call Customer Service at (213) 320-1664, Monday through Friday, 8:00 am to 4:30 PM, PST.

DISK REPLACEMENT FORM

Name _____

Company _____ Dept./Div. _____

Address _____ Suite/Room _____

City _____ State _____ Zip _____

Country _____ Phone ( )_____-_____

* System Disk Serial Number (REQUIRED) _____

Ashton-Tate Product Used _____

Computer Brand and Model Used _____

AMOUNT ENCLOSED: $_____

NOTE: You must either insure any defective system disk being returned or assume the risk of loss or damage in transit.

* If your disk indicates your serial number as being "ON FILE," refer to your original system disk or system backup disk for your serial number.

TechNotes Reader Survey

In our effort to make ***TechNotes*** an even more valuable resource to you, we want your thoughts about it. Please take a minute to fill in the following questions, and return it to us in the postage-paid return envelope. Share with us your comments so that we may keep ***TechNotes*** in tune with your needs. Thank you.

= =

1. Which of the following statements best describes your *overall feeling* about ***TechNotes***?

   Excellent, almost always has useful information for me. ____
   Good, frequently has useful information for me. ____
   Average, occasionally has useful information for me. ____
   Fair, seldom has useful information for me. ____
   Poor, almost never has useful information for me. ____

2. Which Ashton-Tate product(s) do you use one or more times a week? (Check all that apply.) ____None

   ____ dBASE II ____ dBASE III ____ Developer's Release
   ____ dBASE III PLUS ____ Framework ____ Framework II

3. How long have you used Ashton-Tate products? ____ yrs ____ mos.

4. How long have you subscribed to ***TechNotes***? ____ yrs ____ mos.

5. Do you keep your back issues of ***TechNotes***? ____ Yes ____ No

6. How many people, *besides you*, read your copy of ***TechNotes***?____

7. Please rank from 1 to 9 the following types of information in order of their *usefulness to you*. (1 is most useful, 9 is least useful.)

   ____ Technical Articles ____ Anomalies
   ____ Application Articles ____ Sample Programs
   ____ Letters from users ____ Update Policies
   ____ Usage Tips ____ ***TechNotes*** Index
   ____ Your Choice ____

8. When you have a technical question or problem related to Ashton-Tate products, what do you do *first*?

   ____ Call Software Support
   ____ Read ***TechNotes***
   ____ Connect to On-Line Services (CompuServe, The Source, etc.)
   ____ Read the documentation
   ____ Call a knowledgeable friend
   ____ Other ____

9. Which MultiMate® product(s) do you use? (Check all that apply.)

   ____ None ____ On-File™
   ____ MultiMate Advantage™ ____ GraphLink™
   ____ MultiMate 3.3 Series ____ Business Advantage™ Keyboard
   ____ MultiMate Executive™ ____ Business Advantage Communications Board
   ____ Just Write™

10. Would you like to see topics about MultiMate software covered in ***TechNotes***? ___ Yes ___ No

    If yes, what topics?

    1._____

    2._____

11. Would you like to see *advertisements* in ***TechNotes*** on products and services related to Ashton-Tate products? ___ Yes ___ No

    If yes, what products or services would you like to see advertised?

    1._____

    2._____

    If no, why not?_____

    _____

12. Would you like to see *case studies* in ***TechNotes*** on how Ashton-Tate software is being used to solve business problems? ___ Yes ___ No

    If yes, do you have a suggestion for a case study?

    _____

13. Which of the following would you like to see expanded in coverage and which reduced in coverage in ***TechNotes***?

	Expand	**Reduce**	**Stay as is**
dBASE II	___	___	___
dBASE III	___	___	___
Developer's Release	___	___	___
dBASE III PLUS	___	___	___
Framework 1.x	___	___	___
Framework II	___	___	___
Usage Tips	___	___	___
Anomalies	___	___	___
Letters	___	___	___
Policies	___	___	___
MultiMate	___	___	___

14. What, if any, additional topics would you like to have included in ***TechNotes***, in order of your preference?

    1._____

    2._____

    3._____

15. What is the single thing that you *like most* about ***TechNotes***?

    _____

16. What is the single thing that you *like least* about ***TechNotes***?

    _____

17. What other comments would you like to make regarding any topic?

    _____

    _____

    _____

Thank you for your valuable input.

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Which product(s) do you use? __ **dBASE II** (D2)
__ **dBASE III** (D3)
__ **Framework** (FW)

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Software Support Center
Ashton-Tate
20101 Hamilton Ave.
Torrance, CA 90502-1319

NAME _____ DATE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE (During normal business hours) ( ) _____ - _____

_____

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Thank you for reading ***TechNotes***. If you do not have a submission for us, write us anyway and let us know what you think about our publication. We certainly appreciate any feedback you may have.

CUMULATIVE INDEX

January 1986 through May 1986

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Articles

Subject	Product	Issue	Page	Title and Description
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		Jan	34	**Removing Tabs from a Word Frame** *Program used on text files before or after transmitting*
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Anomalies

Product	Entry	Issue	Page	Description
dBASE II	APPEND FROM	Jan	45	*Cautions regarding APPENDing numeric data in version 2.43**
	COUNT	Feb	43	*In DOS ver. 3.x, COUNT may take longer to execute the second time*
	ERROR MESSAGE	Feb	42	*" 'TO'PHRASE NOT FOUND": Memory variable corruption*
	MEMORY VARIABLES	Feb	42	*Corruption of numeric memory variables in dBASE II, version 2.43**
	RENAME.COM	Feb	43	*This file is not on the RunTime disk, as the manual states*
	RUNTIME	Feb	43	*RENAME.COM is not on the RunTime disk, as the manual states*
	SKIP	Apr	47	*Cannot have a space preceding the argument of the SKIP function*
dBASE III	BROWSE	Jan	45	*Problems using the SEEK option with SET DELETED ON*
	DBRUN.OVL	Jan	46	*This file may not get copied during Developer's Release INSTALL*
	ERROR MESSAGE	Jan	46	*"Record is out of range": trying to GOTO a very large number*
	FIND	Jan	45	*With numeric INDEX, FIND <cstring> will FIND first zero valued record*
	GOTO	Jan	46	*Attempting to GOTO a very large number may lock the computer*
	INDEX	Jan	45	*With numeric INDEX, FIND <cstring> will FIND first zero valued record*
	INSTALL	Jan	46	*Developer's Release: INSTALL may not copy DBRUN.OVL*
	PARAMETERS	Jan	46	*Cannot wrap PARAMETERS line with semi-colon*
	RUNTIME+	Jan	46	*DBRUN.OVL may not get copied during Developer's Release INSTALL*
	SEEK	Jan	45	*Problems using the SEEK option in BROWSE with SET DELETED ON*
	SET DELETED ON	Jan	45	*Problems using the SEEK option in BROWSE with SET DELETED ON*
dBASE III PLUS	@...SAY/GET	Apr	48	*Should not use line 0 with SET SCOREBOARD ON*
	CREATE/MODIFY SCREEN	Apr	48	*The <new field> option always creates a one-character field*
	CREATE/MODIFY VIEW	Apr	48	*Cannot permanently delete a FILTER in MODIFY VIEW*
	CREATE/MODIFY VIEW	Apr	48	*Can only include files from the current subdirectory*
	ERROR MESSAGE	Apr	48	*"Alias already in use": Accessing another subdirectory with views*
	ERROR MESSAGE	Apr	48	*"Record not in index": Using SET CENTURY ON with DTOC() to index file*
	FOUND()	Apr	48	*Will return .F. if first record is deleted and SET DELETED is on*
	INDEX	Apr	48	*Cannot use SET CENTURY ON with DTOC() to create an index file*
	READKEY()	Apr	49	*Returns 270 if operation is terminated by Ctrl-End or Ctrl-W*
	SET HELP	May	33	*The full-screen SET command HELP screen is displayed on SET errors*
	SET SCOREBOARD	Apr	47	*Should not address line 0 with SET SCOREBOARD ON*

Anomalies

Product	Entry	Issue	Page	Description
Framework II	.TCM SETUP FILES	May	34	*Telecommunication setup files with imbedded spaces cause DOS errors*
	@setformula	May	33	*A Return after the comma may hide the formula from view*
	@trace	May	34	*@int and @abs may return incorrect results if @trace is ON*
	TELECOMMUNICATION	May	34	*Telecommunication setup files with imbedded spaces cause DOS errors*

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Product	Entry	Issue	Page	Description
dBASE II	CHR()	Apr	56	*Sending line feeds (without carriage returns) to the printer*
	DATA DISPLAY	Feb	44	*Old data displaying in a file with zero records*
	NUMERIC ACCURACY	Jan	49	*Versions prior to 2.43* have 10 digits of numeric accuracy*
	PRINTING	Apr	56	*Sending line feeds (without carriage returns) to the printer*
	REPORT FORM	Jan	48	*Incorrect totals in versions prior to 2.43**
	SED	Mar	44	*Work-around for hard tabs created in SED*
	WANG PC	May	41	*Redefining WANG PC function keys using version 2.41*
dBASE III	BROWSE	Jan	49	*Problems using the SEEK option with SET DELETED ON*
	CHARACTER STRINGS	Mar	45	*Removing preceding blanks from character strings in dBASE III*
	ERROR MESSAGE	Jan	48	*"NO FIND": Character index key length must be a multiple of 4*
	ERROR MESSAGE	Jan	48	*"Internal error, illegal opcode ": Char INDEX must be multiple of 4*
	IMPORT/EXPORT	Feb	44	*Transferring data from Lotus 1-2-3 to dBASE III*
	INDEX	Apr	56	*Creating index files in a subdirectory*
	INDEX	Jan	47	*Character INDEX key length must be a multiple of 4*
	INSTALL	Jan	48	*Problems with Tallgrass: set Duplicate Directories OFF*
	LABEL FORM	Mar	45	*Using two database files with LABEL FORM*
	LOTUS	Feb	44	*Transferring data from Lotus 1-2-3 to dBASE III*
	REPORT FORM	May	40	*Right-justifying character fields with the TRIM() function*
	SED	Mar	44	*Work-around for hard tabs created in SED*
	SEEK	Jan	49	*Problems using the SEEK option in BROWSE with SET DELETED ON*
	SET	Jan	49	*Accessing SET parameters from within program control*
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	SET PATH TO	Apr	56	*Cannot use SET PATH TO to create index files in subdirectories*
	SUBDIRECTORIES	Apr	56	*Creating index files in a subdirectory*
	TALLGRASS	Jan	48	*Problems INSTALLing: set duplicate directories OFF*
	TRIM()	May	40	*Right-justifying character fields with the TRIM() function*
dBASE III PLUS	IIF()	Apr	57	*Using IIF() for conditional indexing*
	INDEX	May	41	*Indexing on a date and time field*
	LTRIM()	Mar	45	*This function removes preceding blanks from character strings*

Letters

Product	Entry	Issue	Page	Description
Framework II	@date1	May	40	*Bolding the system date in a header using @hl and Ctrl-W*
	@hl	May	40	*Bolding the system date in a header using @date1 and Ctrl-W*
	ASSEMBLY LANGUAGE	Mar	46	*Using Framework II word processor to write assembly language programs*
	IMPORT	Apr	55	*How to import Lotus 1-2-3 Release 2 files*
	LOTUS 1-2-3	Apr	55	*How to import Lotus 1-2-3 Release 2 files*
	MEMORY-RESIDENT	Feb	45	*May have problems using memory-resident programs with Framework*
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dBASE III PLUS	INDEX ON	May	13	*The index key length problem is corrected in PLUS*
	LEADING ZEROS	May	12	*Converting a numeric field to a character field for INDEXing*
	NETWORK	May	12	*Network commands are ignored in the Sampler*
	NUMERIC VARIABLES	May	12	*Converting a numeric field to a character field for INDEXing*
	REPORTING	May	13	*Using the TRANSFORM() function to print reports*
	SET FILTER TO	May	11	*Using SET FILTER TO and SET RELATION TO together*
	SET RELATION TO	May	11	*Using SET FILTER TO and SET RELATION TO together*
	TRANSFORM()	May	13	*Using the TRANSFORM() function to print reports*
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	CONTROL CHARACTERS	May	8	*Sending control characters during telecommunication*
	FILTERING	May	8	*Filtering timing characters during telecommunication*
	IBM EGA	May	9	*Using the @scan formula to filter a database*
	MOUSE	May	10	*Setting up the right screen driver for the IBM EGA*
	SCREEN DRIVERS	May	10	*Using a mouse*
	TERMINAL EMULATION	May	10	*Setting up the correct screen driver for the IBM EGA*
		May	9	*Using terminal emulation during telecommunication*

Sample Programs

Product	Entry	Issue	Page	Description
dBASE II	CSEED2.PRG	Jan	17	*Program to create a seed value for random number generation-dBASE II*
	EVAL2.PRG	Jan	22	*Calculates the standard deviation and mean value of random numbers-D2*
	HEC-DEC.CMD/PRG	Feb	18	*Converts hex program into a dBASE II POKE sequence*
	LEADZERO.PRG	Feb	20	*Program to replace leading blanks with zeros*
	MODSTUC.PRG	Jan	10	*Program to emulate MODIFY STRUCTURE*
	RANDOM2.PRG	Jan	18	*Program to generate a random number*
	WINNERS.PRG	Jan	20	*Program to select random winners from a database file*

Sample Programs

Product	Entry	Issue	Page	Description
dBASE III	CSEED3.PRG	Jan	19	*Program to create a seed value for random number generation*
	DECRYPT.PRG	Feb	33	*Data decryption program for dBASE III*
	ENCRYPT.PRG	Feb	31	*Data encryption program for dBASE III*
	EVAL3.PRG	Jan	23	*Calculates the standard deviation and mean value of random numbers-D3*
	FILEPROC.PRG	Mar	22	*Procedure file prints program listings*
	PRGPRINT.PRG	Mar	21	*Program to display menu selection for print program listings*
	RANDOM3.PRG	Jan	20	*Program to generate a random number*
dBASE III PLUS	COLOR.PRG	Mar	12	*Program to SET COLOR from a menu in dBASE III PLUS*
	CPDELIM.PRG	May	28	*COPY a comma separated file without delimiters*
	DATABASE.PRG	Apr	28	*How to maintain database files in the Catalog management application*
	DISPLAY.PRG	Apr	30	*Program to manipulate data in the Catalog*
	ERR.PRG	Apr	32	*Program to handle errors in the Catalog management application*
	FREEARRAY.PRC	Apr	16	*Procedure to remove an array from memory*
	LIST.PRG	May	25	*Lists a screen and prompts for a screen dump to the printer*
	LISTFORM.PRG	Apr	23	*Program to list a database file in a vertical form*
	LISTHIST.PRG	Feb	8	*Program to LIST HISTORY to a file in dBASE III PLUS*
	LOADARRAY.PRC	Apr	14	*Procedure to load an array from a database file*
	MAIN.PRG	Apr	27	*Main driver program for the Catalog management application*
	MAKEARRAY.PRC	Apr	12	*Procedure to create a new array*
	NEWPAGE.PRG	Apr	25	*Program to print page top called from Listform.PRG*
	OPTION.PRG	Apr	29	*Program to allow access to index files and queries in the Catalog*
	SEEKARRAY.PRC	Apr	15	*Procedure to find an element within a defined array*
	VIEW.PRG	Feb	12	*Program to toggle between table view and form view*
	WRAP.PRG	Apr	24	*Program to wrap long strings, called from Listform.PRG*
Framework II	ALT-B (BOX MACRO)	Apr	39	*Macro to draw boxes in word frames*
	DATA TABLE	Feb	35	*Program to create data tables in Framework II*
	HEX	Apr	37	*FRED function to convert a decimal number to hexidecimal*
	LABELPGM	Mar	14	*Program to automate mailing labels*
	LSTRING	Jan	25	*Function to extract the left portion of a character string*
	MID STRING	Jan	31	*Macro to extract the mid portion of a string in word frames*
	PFS TRANSFER	Mar	37	*Program to transfer files from pfs:file to Framework II*
	RSTRING	Jan	26	*Function to extract the right portion of a character string*
	RUNDBASE	Mar	27	*Running dBASE from within Framework II*
	STRING FUNCTIONS	Jan	24	*User-defined string functions used in spreadsheet and database frames*
	TABSTOP	Mar	18	*Macro for putting variable tab stops into word frames*
	TABSTRIP	Jan	33	*Program to remove tabs from a word frame*

Sample Programs

Product	Entry	Issue	Page	Description
Other	CHOOSE.COM	Mar	33	*An assembly language routine used to choose menu options with MENU.BAT*
	MENU.BAT	Mar	32	*DOS batch file is controlling program for front-end menu system*
	MENU.DAT	Mar	33	*DOS batch file, called from MENU.BAT, displays menu screen*

Usage Tips

Product	Entry	Issue	Page	Description
dBASE II	@...SAY	Jan	37	*Patches to access line 24 with @...SAY in versions 2.4 or higher*
		Jan	37	*"@ row,column SAY ERASE" only clears one line in CP/M-80 formats*
	DEBUG	Jan	37	*Patches to access line 24 with @...SAY in versions 2.4 and higher*
	NUMERIC VARIABLES	Mar	40	*How to left-justify numeric variables*
	SUBDIRECTORIES	Mar	39	*Using logical drive designators as subdirectories with DOS 3.1*
dBASE III	ASSIST	Mar	40	*Commands executed in ASSIST can be recorded in HISTORY*
	COPY	Jan	38	*Method to COPY fields from one database file to another*
	DELETE	Jan	39	*Deleting records based on values in a related database file*
	SET PATH TO	Jan	40	*If SAFETY is ON, some commands will search the path before writing*
	SET PATH TO	Jan	40	*Commands which use the path to locate a file*
	SET SAFETY ON/OFF	Jan	40	*If ON, some commands will search the path before writing to disk*

Usage Tips

Product	Entry	Issue	Page	Description
dBASE III PLUS	43-Line Mode on EGA	May	27	*Toggling the IBM Enhanced Graphics Adapter's 43-line display mode*
	@...SAY	Apr	42	*Control codes are counted as characters but not sent to the printer*
	@...SAY/GET	May	27	*Large SCOREBOARD area conflicts with @...SAY/GET to line 0*
	ACCESS DISK	Apr	42	*Disk manufacturing error affected products with certain serial numbers*
	APPEND FROM	May	27	*Files without delimiters will be correctly APPENDed*
	ASSIST	Apr	43	*Building search conditions with date fields*
	ASSIST	Apr	43	*Cannot build a search condition for blank spaces*
	CASE	Apr	43	*Omittion of DO CASE or ENDCASE in a CASE structure affects commands*
	CONFIG.DB	Apr	44	*Using the keyword COMMAND in CONFIG.DB will alter the initial sign on*
	CONTROL CODES	Apr	42	*Control codes to the printer with @...SAYs are counted as character*
	COPY STRUCTURE	May	28	*Recreating a file structure with COPY STRUCTURE EXTENDED*
	COPY TO [DELIMITED]	May	28	*COPY a comma separated text file without delimiters*
	CREATE FROM	May	28	*CREATE a new file from another containing the structure as records*
	CTOD()	Apr	43	*Non-date entries are accepted as arguments in ASSIST*
	DATE FIELDS	Apr	43	*Building search conditions with date fields in ASSIST*
	DO WHILE	Apr	44	*DO WHILE EOF()=.T. returns "Invalid Operator"*
	DOT PROMPT	Apr	44	*The command line now scrolls, eliminating the need for a semi-colon*
	ERROR MESSAGE	Apr	44	*"Invalid Operator": Results from improper syntax of DO WHILE statement*
	HISTORY	Mar	40	*Commands executed in ASSIST can be recorded in HISTORY*
	IBM EGA	May	27	*Toggling the IBM Enhanced Graphics Adapter's 43-line display mode*
	INPUT	Apr	44	*INPUT does not accept a Return as valid input*
	INTERACTIVE MODE	Apr	44	*Cannot continue dot prompt commands with a semi-colon*
	MODIFY VIEW	Apr	46	*Will return error message if any components of the view have changed*
	PRINTING	Apr	42	*Control codes to the printer with @...SAYs are counted as characters*
	PUBLIC	May	30	*Variables SAVEd as PUBLIC will be RESTOREd as PUBLIC*
	REPLACE	May	31	*Using REPLACE to update a many-to-one related database file*
	RESTORE	May	30	*Variables remain PUBLIC once RESTOREd if declared so before a SAVE*
	SAVE TO	May	30	*Variables SAVEd as PUBLIC will be RESTOREd as PUBLIC*
	SET COLOR	May	30	*A table of the default color attributes shows changes from dBASE III*
	SET DATE FRENCH	Apr	45	*This command is now the same as SET DATE BRITISH*
	SET FIELDS TO	Apr	45	*SET FIELDS TO <field list> automatically SETs FIELDS ON Must reposition the record pointer after this command*
	SET ORDER TO	Apr	45	*A syntax error is returned if SET RELATION is used without TO*
	SET RELATION TO	May	31	*Clears the entire screen*
	SET SCOREBOARD	Apr	45	*Using @...SAY to line 0 will not write in the SCOREBOARD area*
	SET SCOREBOARD	May	27	*Clears the entire screen*
	SET STATUS	Apr	45	*Cannot make changes to any component parts of a view*
	SET VIEW TO	Apr	46	*Using REPLACE to update a many-to-one related database file*
	UPDATE	May	31	

Usage Tips

Product	Entry	Issue	Page	Description
Developer's Release	DBRUN.COM	Jan	40	*This file, not DBRUN.EXE, should be renamed as per the documentation*
	DBRUN.EXE	Jan	40	*This hidden file will not show up with DIR and cannot be renamed*
	READ	Jan	40	*In Developer's Release, a READ must have active GETs*
	READ	Jan	40	*Cannot issue a READ from within HISTORY in Developer's Release*
	REINDEX	Jan	40	*Must reissue the SET ORDER TO command if you REINDEX*
	SET ORDER TO	Jan	40	*Use REINDEX to SET ORDER TO its original state*
Framework II	.PAR FILES	Mar	43	*Converting .PAR files to .TCM files*
	TCM FILES	Mar	43	*Converting .PAR files to .TCM files*
	@sum	Mar	42	*Cannot remove the last column/row referenced by @sum*
	@time	Jan	42	*Displaying times with the Numbers pull-down menu*
	APPS MENU	Mar	43	*Some Print Output Options have no effect on Mailmerge or Print Labels*
	CONDENSED PRINT	May	32	*Condensed Print takes precedence over Near Letter Quality on LQ1500*
	DICTIONARY	Mar	42	*May take a long time to save the personal dictionary the first time*
	DOW JONES	Mar	42	*Copying fractions from text into spreadsheets*
	EPSON LQ1500	May	32	*Condensed Print takes precedence over Near Letter Quality on LQ1500*
	EXTENDED MEMORY	Mar	42	*Memory requirements for extended memory*
	FRACTIONS	Mar	42	*Copying fractions from text into spreadsheets*
	IBM 3270t	Jan	44	*This screen driver is found under "All Other IBM Drivers" in SETUP*
	IMPORT	Mar	41	*Importing Framework 1.x files to Framework II*
	IMPORT/EXPORT	May	32	*Procedure to correctly transfer Lotus files*
	LABELS	Mar	43	*Some Print Output Options have no effect on Mailmerge or Print Labels*
	LOTUS	May	32	*Procedure to correctly transfer Lotus files*
	MAILMERGE	Mar	43	*Some Print Output Options have no effect on Mailmerge or Print Labels*
	PAR FILES	Jan	44	*How to read .PAR files from Framework into Framework II*
	PRINTING	Mar	41	*How to print subscripts and superscripts from Framework II*
	PRINTING	Mar	43	*Some Print Output Options have no effect on Mailmerge or Print Labels*
	PROTECT FROM EDITING	May	32	*Empty spreadsheet cells cannot be protected until they contain data*
	SETUP	Jan	42	*Selecting screen color parameters in SETUP*
	SIZING COLUMNS	Mar	42	*Changing several spreadsheet or database columns at one time*
	SPREADSHEETS	Mar	42	*Copying fractions from text into spreadsheets*
	SUBSCRIPTS	Mar	41	*How to print subscripts and superscripts from Framework II*
	SUPERSCRIPTS	Mar	41	*How to print subscripts and superscripts from Framework II*
	TELECOMMUNICATIONS	Mar	43	*Converting .PAR files to .TCM files*
	TEXT	Mar	42	*Copying fractions from text into spreadsheets*
	VIRTUAL MEMORY	Mar	41	*Cannot use virtual memory to import Framework 1.x files*

Miscellaneous

Subject	Issue	Page	Description
COMMUNICATIONS	May	36	*Listing and description of communications boards from Multimate*
CORRIGENDA	Apr	53	*Corrections to the December 1985 issue*
	Feb	27	*Corrections to the March 1985 issue*
	Jan	36	*Corrections to September 1985, November 1985, and December 1985 issues*
	Mar	3	*Corrections to the July 1985, October 1985, and December 1985 issues*
	May	7	*Corrections to the March 1986 issue*
MULTIMATE	Apr	50	*Features of MultiMate Advantage update (version 3.60)*
	Apr	52	*Where to look when you have technical difficulties*
	Apr	52	*About MultiMate Technical Support—Supported products, when to call*
	Apr	53	*Customer Service versus Technical Support*
NEW PRODUCTS	May	37	*Expanded products line from Multimate for the IBM PC family*
ON-LINE SUPPORT	Jan	3	*Information pertaining to CompuServe, The Source, and Onepoint*
SUBSIDIARY OFFICES	Jan	56	*List of Ashton-Tate international subsidiary offices*
TRAINING CENTERS	Jan	54	*Listing of Ashton-Tate Authorized Training Centers*
	Mar	47	*Listing of Ashton-Tate Authorized Training Centers*

TechNotes
P.O. Box 3729
Escondido, CA 92025-0929

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